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NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—

The 31st annual anniversary of the national organization, was held in Philadelphia on the 18th, 19th and 20th of last month, in the amphitheatre of the Academy of Natural Sciences, and though our notice can be but brief, we feel it our duty to call the attention of our readers to that event.

The association having of late assumed entire charge of the publication of the transactions, minutes, papers and discussions, it is not possible for us to do anything better than to ask our friends to have patience and wait until the complete publication is issued.

As far as we can say, however, the meeting was a success. The committee of arrangements had things well prepared and the meeting was officially opened by an address delivered by the Mayor of Philadelphia, Hon. Edwin S. Stuart, to a rather thin audience of the veterinarians of the United States. The meeting then went to regular business, and according to the programme laid out, the report of the regular committees occupied the first day of the meeting. We understood that the report of the committee on intelligence and education was the best that had ever been presented, and that Dr. Carey, (we believe) the chairman, deserved a great deal of credit for the able manner in which he handled the subject.

The second day (the 19th) was occupied with the reports of the Committee on Congress of Colleges, on the Act of Incorporation, and on revision of the Constitution and By-Laws, with that of the nomenclature of swine diseases and hog cholera.

It is certainly necessary that a complete stenographic report of the work of those various committees should be in hand in order to be able to criticise them; to accept their views and consider their plans and suggestions. No doubt it will give us pleasure to refer to them later on.

The election of officers was carried on according to the new amended by-laws, giving us a somewhat larger number of officers. The newly elected members being Dr. W. H. Hoskins, re-elected president; for vice-presidents, Dr. J. F. Winchester, T. J. Turner and W. L. Williams; for secretary, Dr. L. Pearson; for treasurer, Dr. J. L. Robertson.

The paper of "Neurotomy," by Prof. S. J. Harger, was most interesting, as were those of the Committee on Tuberculosis, which were presented by Drs. J. Faust, Leonard Parson and Trumbower.

The paper of Dr. Edward L. Williams on the "Peculiarities of the Diseases of the Rocky Mountain Regions," gave rise to considerable discussion.

The meeting adjourned for a visit to the Veterinary Department of the University of Pennsylvania and to the Zoölogical Garden, and afterwards the association met at the Colonnade Hotel, where they partook of the kind and friendly hospitality of our bretherns of the great Quaker City.

In brief, such is what we can say of the 31st meeting of the U. S. V. M. A. Peculiar conditions, our unavoidable absence from the meeting when we felt we ought to have been present, prevents us from considering it more for the present, and all that we may well say is, that from what we have seen, the 31st meeting of the U. S. V. M. A. has been a success, and that those who were present will always remember the brotherly reception offered by the veterinarians of the Pennsylvania Society.

ORIGINAL ARTICLES.

DIAGNOSIS AND PREVENTION OF TUBERCULOSIS.

By J. F. WINCHESTER, D.V.S., Lawrence, Mass.

A paper read before the Massachusetts Veterinary Medical Association.

It is essential in discussing the diagnosis of tuberculosis to bear in mind that the veterinary surgeon may be called upon to say whether an animal is affected or not, under two very different circumstances. He may, in one instance, be expected to make a differential diagnosis in a case where the animal is noticed to be ill, and regarding which his advice is desired by the owner; or in another animal, as a veterinary inspector, he is expected to recognize the disease, when to the ordinary observer and owner the animal has the general appearance of health. It certainly must be apparent that if there exists any uncertainty in the first of these conditions by a physical examination, how much greater must that difficulty be in the second. In order to illustrate this difference, one ought to bear in mind the lesions found at the autopsy of animals that have died from, or killed as being helplessly diseased, in the first instance; and those lesions of tuberculosis which are found in animals killed for food and supposed to be healthy at time of slaughter, in the second.

The lesions of this malady have a very different distribution when we take account, not merely of the animals about which veterinary advice is sought, but of all cases in which tuberculosis in any degree is brought to light by a reasonably careful post-mortem examination. An absolutely certain diagnosis can seldom or never be made by ordinary clinical methods.

Tuberculosis may be acute or chronic, and the former may run its course in a few weeks, while the latter may last for years. At the beginning of the acute form, and for an indefinite length of time in the chronic, the disease process may be confined to one organ or to one region of the body, and the symptoms will vary according to the time involved.

In all the various forms and seats of the disease, the bacillus may be found in the affected parts. When the lungs are involved in the chronic forms, and the amount of the tissue is not extensive, the animal often presents the general appearance of health with, perhaps, the exception of a slight cough. The diagnosis of such cases by the ordinary physical method, will, as a rule, give negative returns, and suspicion only can be attached to such a case if associated with tuberculous animals. When the lungs become very extensively involved, the symptoms are more distinct and reliable than the general appearance of the animal will assist. The fact that the lung in tuberculosis consolidates in patches with intervening spaces of normal tissues, will aid one to differentiate from many other forms of lung trouble. In the bovine race, when a certain part of the lung is diseased, and that by any means not slight, while at a point beyond that necessary for the required oxidation of the blood, they will fail; the same clinical fact is seen when the pleura is extensively diseased.

The diagnosis of this disease in the digestive tract is impossible in the early stages by the usual method, and it is only when emaciated, diarrhoea, constipation and periodic attacks of hoven occur, that one might be justified in condemning the animal if there are no other associated symptoms.

Occasionally one will see a bovine with chronic hoven and, if associated with tuberculosis, the post-mortem will often reveal an enlargement of the lymphatics at the cardiac portion of the oesophagus, posterior to the diaphragm.

The differential diagnosis of the diseases of the udder is very essential, for it is frequently tuberculous. When simple mastitis is present, you will find diffused swelling of the quarter affected, which is hot and painful to the touch, the milk changes in its physical appearance, and as a rule it responds quickly to treatment. When the udder is tuberculous, the swelling is hard and nodulated, and as has been well said, it feels as though it was full of kernals and seeds, well defined; it is neither hot nor painful, nor does the milk change in a marked degree, although in

a short time it becomes poorer in quality while it may increase in quantity. The external or superficial glands, in many instances, will decide the question of this malady. They are larger than normal, nodulated, and those on one side of the body will not correspond in size to the opposite. Tubercles are sometimes found in or under the skin, and are easily felt in the form of well-defined nodules.

The placenta in tuberculous animals is often studded with small, opaque, well-defined new formations. The bones and articulations are not uncommonly attacked, those entering into the formation of the elbow, knee, hock and styfle joints being most often affected. Lameness is very often marked in some cases, the joints swollen and tense, the ends of the bones enlarged. The diseased bone may crumble, and sharp spiculæ protrude through the skin. The cerebro spinal system is not exempt from its ravages, and tubercular meningitis is not infrequent. The symptoms will vary according to the location, from excitement to stupor, paralysis, partial or complete. Some animals will walk in a circle for days with the head down and to one side. Young animals not infrequently die from acute tubercular meningitis. Paraplegia is seen when the lesions are located in the lumbar region of the spinal cord. It is generally acknowledged that the diagnosis of tuberculosis is no simple matter in any stage, especially where one cannot obtain a history of association with tuberculous animals; then how much more must it be in occult and equivocal cases. Instead of depending upon a physical examination or clinical observation to diagnose this malady, use can be made of the microscope, inoculation or the injection of tuberculin.

The first two methods require special study and considerable time, which is not practical or desirable when a large number of animals are in question, while the third has been demonstrated to be an almost infallible test with proper care and observation. The tuberculin test is based on the fact, as shown by Koch, that it increases the activity of the disease process, creating a general disturbance of the system, which is manifest by an

elevation of the temperature. The minute quantity which will not affect a healthy animal, when injected into a slightly tuberculous one, will, in from 8 to 36 hours, cause a decided rise in temperature. The explanation of this is that the system contains tuberculin produced by the disease, to which the animal has become so accustomed that it cannot be detected by any clinical test. When the small amount of tuberculin used for the test is introduced into the circulation, it increases the activity of the disease process, and as a result the temperature of the body is elevated. From this fact it is evident that the quantity of tuberculin to be used ought to vary with each animal, but experiments and observation have demonstrated that for ordinary size cows, a certain amount (25 cc.) can be relied upon for positive results in occult cases. Cases may occur in which the temperature of a cow will rise after the injection of tuberculin and still the animal is not tuberculous. Any febrile disturbance may set in after the injection, the period of heat or bulling, close approach to parturition, active exertion, exposure, too hot sun, confinement in close building or privation of water.

It is evident from these facts that only the trained veterinarian should use tuberculin, and he must always be on his guard not to mistake any febrile disturbance that might arise other than would occur by the use of tuberculin in the tuberculous. Laying aside these and other causes of error in unskilled hands, the elevation of the temperature should not condemn tuberculin, but stimulate a search for occult tubercles, and a failure will be rare.

There are cases where the animal is tuberculous and the injection of tuberculin will not cause any febrile reaction. In such animals the system is saturated with tuberculin and the small amount injected will not make an impression. These cases are readily diagnosed by a physical examination. A reaction will take place even in the slightest case of tuberculosis by the use of tuberculin, and many of the animals would live for years and might recover. For this reason, when it is desirable to dispose of the diseased animals, or to exclude from a herd

any that are tuberculous, it is indispensable as a diagnostic agent. When tuberculin is properly prepared, it will not injure a healthy animal. That it will aggravate tuberculosis already in existence, is an established fact, and for this reason it has demonstrated its value as a test. Knowing this, it should never be used unless the owner or the government intend to make thorough the work of eradicating the diseased animals.

Tuberculosis has been described as a universal panzotic, and from the deaths in the human subject of this disease, it can well be termed pandemic. This being evident, prevention is certainly the most rational method of making any inroad into its prevalence.

Fleming, in his *Sanitary Science and Police*, published in 1875, under the heading of "Prevention," says: "The only preventive measures with which we are acquainted are those of a hygienic kind: proper food and water, sufficient exercise in the open air, clean, dry and well ventilated, but not too cold stables, and keeping the cattle from undue exposure to severe weather. As there is reason to believe that the malady is hereditary, cattle having tendency to it should not be bred from.

As the experiments which have been conducted by most competent authorities have demonstrated that tuberculosis can be induced in animals by feeding them with tubercular matter, care must be taken that this is not given to them as food. There being much reason to believe that the disease can be transmitted by co-habitation, whenever cattle show any tendency to it, they should be isolated from the healthy, and every precaution observed with regard to preventing contact. Animals slightly affected should be fattened and slaughtered, and their flesh, if free from traces of the disease, may be utilized. The milk of such animals should be proscribed, and in advance cases, the flesh also."

It is readily seen from this quotation that the requirements for protection against the disease, either in man or animals, are the same. It can be concisely stated in the word hygiene. I doubt if any one will take exception to the statement that sun-

light, combined with cleanliness, proper drainage and ventilation, is necessary to maintain and create a constitution capable of resisting disease. Tuberculosis is an infectious disease, and with the means we have to diagnose this malady, there cannot be any excuse why the products of tuberculous animals should be used for the benefit of man.

In a brochure issued by the State Board of Health of Massachusetts (May, 1894), it is admitted that the milk from tuberculous animals is a menace to the health of mankind, and it should be proscribed. In regard to the meat of such animals, they recommend its thorough boiling, although they do not feel confident that it will cause the disease, since clinical evidence to that effect is not in existence. Since tuberculosis is a preventable disease, undoubtedly there are cases that will recover. This being a fact, why allow or sanction even the use of tuberculous meat, when it is known that the ptomaines or tuberculin which exists in the flesh of tuberculous animals is not destroyed by boiling, and if introduced into the system of a tuberculous individual, will excite the activity of the disease. It is not desirable to ameliorate a case of tuberculosis after the possibility of prevention has passed. It is admitted by the producers of vaccine virus that the bovines that are used for its production should be in a normal condition, and that for this reason they are examined, by a veterinarian in some instances, and at other times by a supposed to be competent man.

In an article in the *Boston Medical Surgical Journal* for May 3d, on production of vaccine virus, no evidence is shown that tuberculin is used. Then of what value can be an opinion as regards the existence of tuberculosis in occult form. One firm uses mature animals in order that the lymph may be richer in germs, while the other (of the two firms examined) use young animals that are less liable to be diseased. In neither of their establishments does it appear that the product of each animal is kept by itself, and the animal killed allowed of an examination to establish the fact of its normal condition.

In conclusion, let me congratulate the State Board of Health

on its bulletin, as a step in the right direction for the prevention of this, the most universal and insidious of all diseases in the animal kingdom.

Authors cited: Makenzie, Law, McFadyean, Saunders, Robertson and Billings.

PREVALENCE OF BOVINE TUBERCULOSIS.

BY AUSTIN PETERS, D.V.S., Jamaica Plains, Mass.

A paper read before the Massachusetts Veterinary Medical Association.

MR. CHAIRMAN AND GENTLEMEN:—I have been invited to open the discussion of the subject we have taken for consideration this evening by saying a few words upon the prevalence of bovine tuberculosis, and in doing so I shall be as brief as possible because we have a number of interesting speakers to listen to, who will call your attention to this question from different points of view, and also because it is very difficult or almost impossible to obtain any reliable figures showing its frequency among our neat stock.

Tuberculosis has been known for all time and among all civilized people, and among all habitable climates; among cattle keeping people it is known among their bovines, and while it continues to exist among the human race, it will prevail among their cattle, its prevalence among the latter depending upon how they are kept, where they are kept, what they are kept for, and upon the susceptibility of certain breeds or the constitutions of certain individuals.

Among the human family, as well as among the ox tribe, has Pharaoh's dream been constantly repeated, from the days of Joseph to the present day, the seven well favored, fat-fleshed kine have been devoured over and over again by the seven ill-favored and lean-flesh kine, which I have not the least doubt were suffering from tuberculosis, and it is not even necessary to have the seven ill-favored and lean-fleshed kine to devour the seven healthy ones, for if a single tuberculous cow be placed in a dark, badly ventilated stable, with the seven well-favored ones,

kept under unhealthy surroundings and forced to an enormous yield of milk, this single, ill-favored and lean-fleshed individual, will in time succeed in devouring the seven well-favored ones, notwithstanding the fact that the milk from this herd yields the greatly to be desired 13 per cent. of total solids, yet will there be "death in the pot," or rather the milk-can, "consumption at eight cents a quart," or cholera infantum at the same price, or a pleasing mixture of the two commodities combined.

Admitting that tuberculosis is due to a specific germ, the *bacillus of tuberculosis*, and that it can be communicated from one animal to another of the same or a different species, by means of the expectorations after they become dry, or by the consumption of the flesh and milk, or dairy products of tuberculous cattle, yet in order to appreciate the danger to human beings from the use of the dairy products of tuberculous cows, it is important to have some idea of its prevalence.

It is an impossibility to get any statistics to show the extent to which this malady exists among our bovine population, but I think I can show that it is of sufficient frequency to be of very great importance from a sanitary and economic standpoint. Fleming, in his *Manual of Veterinary Sanitary Science and Police*, in speaking of the geographical distribution of this disease among animals says: "Tubercular phthisis, or tuberculosis probably prevails among the domesticated animals over the entire globe, though its frequency will depend upon various external influences, as well as the constitutional tendencies of different species and breeds. In some countries it is enzootic and very destructive. Such is the case in densely populated districts and in unhealthy climates, or in regions where animals are improperly fed and housed. In Mexico, for instance, it is very common, and causes much loss, about 34 per cent. of the animals slaughtered for food being found affected. In Europe, particularly in the cow-sheds of the large towns and cities, it is extensively prevalent; and in this country (meaning England) it has long been recognized as a common disorder among animals, but more especially as affecting the bovine species."

Walley's "Four Bovine Scourges" considers contagious pleuro-pneumonia, rinderpest, foot and mouth disease and tuberculosis as the four great cattle plagues of the world.

In this country rinderpest is unknown; foot and mouth disease does not exist at present; contagious pleuro-pneumonia has been stamped out in every locality in the United States where it has ever existed, so that to-day we can safely say that the only one of the four great bovine scourges staring us in the face and challenging us to combat, if we are not afraid to grapple with it, is tuberculosis.

During the past four or five years many of the states, particularly in the East, have been aroused to take steps to eradicate tuberculosis from among their neat stock, chiefly by having the work attended to by cattle commissioners, and while numbers of cattle have been examined, yet as a rule the work has not been done in a way to give any idea of what relation the number of diseased cattle bear to the number of healthy ones, or what the ratio of herds where the malady exists is to the herds where the creatures are all healthy.

During the winter of 1892-93 the New York State Board of Health, having been empowered to regulate the matter of bovine tuberculosis in that state, undertook a farm to farm inspection of the cattle in two dairy districts with a view of ascertaining about the per cent. of tuberculous cows in a certain region. In lower Westchester County approximately 10,000 herd were examined, and in the neighborhood of 80 were destroyed as tuberculous, or 8 per cent. In Orange County, in the neighborhood of Monroe, about 10,000 herd of cattle were examined, and 35 were killed as tuberculous, or 35 per cent.

In testing herds with tuberculin, I have found that by means of the old-fashioned physical examination, about one case out of three present could be picked out, that is after diagnosing the cases present in a herd by means of a physical examination, and then testing it with tuberculin, three animals will react to everyone found by means of an ordinary diagnosis. Taking this for granted, it is safe to say that among the herds of the

farmer's in a district like Orange County, which somewhat resembles Westchester County, that about 1 per cent. of the cows are tuberculous, these herds being made up largely of hardy grades of the Ayrshire, Holstein and short-horn families.

In Westchester County, nearer New York City, where more cattle of the Channel Island breeds are found, and the system of dairy farming more nearly resembles the milkmen's management on the outskirts of our large towns and cities in eastern Massachusetts, it is safe to say that between two and three per cent. of the cows are tuberculous, allowing that only one case can be detected by means of a physical examination to three that will show a well-marked reaction to tuberculin. These figures compare quite evenly with the abattoir statistics of many of the cities of France, Germany, Belgium and Holland.

In eastern Massachusetts we have no exact figures to give us statistics, but it seems to me that bovine tuberculosis must be much more frequent here than even in Westchester County, N. Y., or else I have been unfortunate enough to be called to see so many herds where tuberculosis exists, during the past winter, as to prejudice me into this belief. Since December 1st I have had occasion to examine 500 head of cattle in eastern Massachusetts, of which 75 have been tuberculous, but then, of course, I am very likely to be called to examine creatures where the presence of tuberculosis is known or suspected.

As to the prevalence of tuberculosis among cattle of various ages or sexes, abattoir statistics show it to be very rare in calves killed for veal. It is seldom seen in steers and oxen killed for beef; in fact, it is almost unknown among our western bees. It is seen chiefly in cows slaughtered for food, and is met most frequently among dairy cows from the outskirts of large cities and towns: here it is found more among the older cows, the lesions being much more readily found in cows over six years old than among those younger. That is, overcrowding in unsanitary stables and the depleting influences of lactation are the two great predisposing causes. Among certain fancy herds of pure-breds of different breeds tuberculosis exists to an alarming

xtent, but this is because some of our breeders have nurtured this malady as carefully for years as though they were trying to breed tubercle bacilli instead of cattle.

In Massachusetts our system for dealing with bovine tuberculosis is faulty. In the first place, this is a commission-ridden state: everything is managed by commissions of three or four men. It is a well known fact that an army with three generals would meet with defeat; a ship with three captains would meet with disaster; a railroad with three superintendents would go into bankruptcy; and yet that which would bring defeat in war, disaster to commerce and bankruptcy in business is expected to work successfully in the affairs of an over-taxed people. These are the views of Seth Low, President of Columbia College, and Gamaliel Bradford. The only possible excuse for such a system is that it furnishes salaries for a lot of played-out politicians and impecunious lawyers, instead of placing the management of affairs in the hands of single responsible heads directly accountable to the appointing power.

Another criticism of the present state of affairs is the system of town and city cattle inspectors. One city or town may appoint a competent veterinarian to such a position—these instances are rare—a few more cities or towns may appoint an incompetent veterinarian, who is but a very slight improvement over any other ignoramus, but in most instances the appointees are men of no special qualifications for the positions they hold; their examination of herds are farces, and the certificates they write are not worth the paper they are written on.

I am in favor of having a state veterinarian who shall be responsible either to the State Board of Health or to the State Board of Agriculture, depending upon whether this subject is to be considered most important from a public health or an agricultural point of view, then divide the states into districts, say ten or a dozen in number, and appoint the best veterinarian in that district (that is, the best cattle practitioner, as the best horseman is not always the best cowman); district veterinary inspector to act under directions from the state veterinarian.

Furthermore, owners of animals suffering from contagious diseases should be reimbursed. The co-operation of farmers in eradicating bovine tuberculosis will never be secured until this is done. There should be also an arrangement for utilizing the meat of slightly diseased cattle for food, and the proceeds of these sales should be used for helping to pay the expenses of this work. It is an outrage to destroy a man's property without paying for it, and absurd to say that tuberculous cattle are not property.

The relation that the use of milk from consumptive cows bears to the malady in mankind will never be known until thorough steps are taken to prevent its use. If all the tuberculous cattle in the state were killed to-morrow, and infected stables burned, there would be a fresh supply in a few years from the contamination of consumptive persons, unless boards of health and physicians are ready to look upon it as an infectious disease, call it thus in annual reports and vital statistics, and take steps for preventing its spread from person to person, and from mankind to cow. If we start a crusade against the poor cow, without taking any other precautions to guard against it, we shall be simply continuing to prevent a waste at the spigot while there is a big leak at the bung.

Sterilizing food is a safeguard to the public health, while on the other hand, there is the economic standpoint of great importance to the farmer, of protecting healthy from diseased cows.

I suppose that what I have said will lead to the hue and cry that "the horse doctors want a pull at the public crib, but they shan't have it" so long as there are any fossilized politicians, unsuccessful lawyers, or even decayed labor leaders to be provided for; but let me remind you that a capable veterinarian can make more in private practice than the salaries usually paid by the state amount to, and as I generally give my texts at the end of my sermons instead of the beginning, I will simply suggest to you, "to render under Cæsar the things that are Cæsar's, and unto God the things that are God's."

SANITARY CONDITIONS OF DAIRY FARMS.

By J. M. PARKER, D.V.M.

A paper read before the Massachusetts Veterinary Medical Association.

In a paper read before the American Medical Association in 1891 on "The Treatment of Chronic Pulmonary Consumption," the essayist remarks that "our surroundings make us what we are. If our treatment could begin with the birth of the patient, in 99 per cent. of cases we should not have any tuberculosis to treat. *No matter about the family history.*" This remark applies equally well to the dairy cow. *Their surroundings make them what they are.* And I venture to assert that, if the sanitary and hygienic conditions were what they should be, we would have little or no bovine tuberculosis in our dairy herds. It is the common every-day life a person leads that governs his health; and it is the common every-day life the dairy cow leads that governs its health and vitality. *Their surroundings make them what they are.*

Sanitary science has made vast strides in the last twenty years, yet our dairy farms are in practically the same condition they were in fifty or one hundred years ago. In fact, no effort is made on the average farm to conform to any sanitary laws or regulations whatsoever. The old barbarous practice of confining the cattle in stanchions is still in use; and the old barn and barn-yard, with its strong, odorous and slimy filth, is still in existence.

Sanitary science is advancing every year. Our cities are well drained; our drinking-water is carefully guarded; houses and schools must have sufficient light and air; our young men and children must have exercise; but yet our dairy cattle are expected to retain their health and strength and to maintain their vitality, shut up for months in close barns, without ventilation or fresh air, and with little light. Compelled to stand in their tracks unable to move—unable to turn round even to lick their sides.

It seems strange that the *entire* question of the sanitary

improvement of our dairy farms should have escaped notice as it has. It is not a new subject. For many years past authorities have discovered that the principle predisposing causes of tuberculosis are poor sanitary and hygienic conditions, and yet, notwithstanding the universal prominence given to sanitary conditions as predisposing causes, they are almost entirely ignored among the prophylactic measures suggested by many of these same authorities.

As showing that sanitary conditions are not observed as they should be on dairy farms, I have attempted to tabulate the conditions as found on twelve farms in this vicinity. These are not picked out, but are taken at random from farms visited from day to day. The table shows roughly the amount of cubic space per cow; the ventilation, light, water supply; whether there is a cellar, with its condition, and how the manure is disposed of.

No.	No. of Cattle.	Cubic Space per Animal.	Ventilation.	Light.	Water.	Cellar.	Manure. How disposed of.
1	7	465	none.	poor.	city.	yes.	cellar.
2	10	286	"	"	spring.	no.	outside barn.
3	1	440	"	none.	city.	"	"
4	6	224	"	poor.	spring.	"	"
5	4	143	"	"	"	"	"
6	7	800	stairway.	fair.	"	yes.	cellar.
7	7	416	none.	good.	well.	"	"
8	12	487	"	"	"	"	"
9	19	1,165	good.	fair.	"	"	"
10	3	266	poor.	poor.	"	"	"
11	3	1,336	none.	good.	puddle.	"	"
12	12	233	"	"	spring.	"	"

You will notice as a rule the cattle are far too crowded. In the city of Boston each animal must have 1,000 c. f. of space, and probably, with good ventilation, that may be sufficient; at any rate, it is an immense improvement on many farms in other parts of the state; but even 1000 c. f. is altogether inadequate if there is no ventilation. What must be the conditions of the barns then, when as in No. 5, there is only $143\frac{1}{4}$ c. f. for each animal, with no ventilation. In only three farms out of the twelve, you will notice, is there any attempt at ventilation,

and even in these it is more in name than fact. And in not a single barn that I have been in is there any provision made for the admission of fresh air.

Of the twelve barns visited four had good light, two had only fair light, five had very poor light, and one had no light at all.

As a rule New England farms have good water, but on some farms the wells are situated too near the yard and receive the surface drainage, and, in some instances, the cattle are even watered in creeks and puddles formed by surface water.

Keeping the manure in the cellar is another common practice. In eight of these twelve barns the manure is kept in this way. At the farm referred to as No. 8, there are twelve cows, each cow with 487 c. f. of space. This barn is well lighted; the windows facing the south, but there is no ventilation whatever except when the door is open. This farmer makes a special boast that his cattle are not out of the barn from fall to spring. They are watered in the barn, and the manure is dropped into the cellar below, where it is allowed to remain till removed in the Spring. In making a visit to this barn during the winter, a man who was with me had to leave the barn because of the foulness of the air.

At another farm, No. 2 and 4, there are two barns. In one containing ten cattle, each animal has 286 c. f. with no ventilation and only one small window for light. The other barn has six cattle, each animal having 224 c. f. This one also is without ventilation or sufficient light. In these barns the air was very bad.

At No. 5 there is no ventilation and only one small window for light in this barn; each animal had only $143\frac{1}{4}$ c. f. Two out of four animals were evidently tuberculous.

At No. 10 three cows are kept in a tightly boarded pen 10 x 10 x 8 giving about 266 c. f. to each animal. At this barn there is a small ventilation and one small window, but in winter when everything is tightly closed, the atmosphere is fearful.

The other day I visited a barn, No. 11; and in conversation with the owner, I asked him where he watered his stock? "In

a puddle outside," he answered. The puddle was a marshy place where the water lodged in wet weather. It was situated about twenty yards from the barn and formed part of the yard. The manure pile was on sloping ground at the side and drained into the puddle.

At No. 12 there are twelve cows, each having 233 c. f. with no ventilation whatever, the farmer taking special pains to have a heavy canvas curtain in front of the cows. This is a fearful hole in winter time, and it has the reputation of being the hottest barn in the district. This farmer is said to lose three or four cows every year.

No. 3 is a small shanty in the city with neither window nor ventilation. The water is carried to the cow, and she is in the barn winter and summer. Inside the barn is terribly filthy.

At another farm (The State Experiment Station of a neighboring state,) the barn is so close and hot in winter that a friend of mine, who was visiting there, had to leave and go into the open air because the hot, foul air in the barn made him sick and inclined to vomit.

These, gentlemen, are common examples of the average New England farm. Farmers have been taught to do these very things that are injurious to their stock. They have been taught to keep the manure in the cellar. What is the result? You have a damp, chilly atmosphere, full of foul odors and organic impurities. They have been taught to keep the barn close and warm, and the only heat it gets is from the animal body. The hotter, they think, the better it is.

In the great majority of dairy farms there is not even a pretence of ventilation, while the cattle are packed in as close as they can conveniently be put. A cow has about four or five times the lung capacity of a man, yet, in many of the farms, each cow has only a tithe of the space required by a child under seven years of age, and that without any ventilation.

Fresh outside air contains only a trace of CO_2 , about four parts in 10,000. The air of a room would be only fairly good with eight or nine parts in 10,000, yet some barns have as much

as fifty or sixty parts of CO_2 in 10,000, and, I have no doubt, if the percentage was taken during cold weather in winter, when the barns are tightly shut up, the air would be very much worse. When only a small quantity of CO_2 is contained in the air, the CO_2 in the lungs is readily diffused through the atmosphere; but when that atmosphere has become impure, when it contains a large amount of CO_2 with organic impurities, then the CO_2 in the lungs is not so readily diffused through the air; it has found its level and is retained in the system where it lowers the vitality, causing the dullness and lethargy experienced by any one after sleeping all night in a close room.

In calculating the amount of impurity in the atmosphere of a barn, the CO_2 is taken as a standard of impurity, only because so far no simple means has been discovered by which the other impurities can be determined, so that the amount of CO_2 shows only relatively the amount of impurity in the air.

When a ray of light penetrates a dark room, innumerable particles are seen floating in the air. These particles of so-called dust are organic matters given off by the occupants of the barn as well as fungi, bacteria, dried manure and particles of hay and grasses. It is this dust that is so dangerous as a source of infection in tuberculosis. The manure, as pointed out by Billings, contains the bacilli; when dry it becomes pulverized and powdery, and, along with the discharges from the nose, it mixes with the dust and chaff and the other impurities in the air which are breathed by the cattle. Ventilation, which should rid the atmosphere in the barn of these impurities, being altogether lacking.

Drainage, dark and damp cellars under the barns have a close relationship to the ventilation and warmth of the barn. The wet and filth usually found in a cellar, keep the air of the barn damp and chilly; while the decomposing animal and vegetable matters give off a quantity of CO_2 which contribute largely to swell the amount already in the barn.

The cellar is considered by many farmers to be a necessity. There the manure is kept; there odd tools and implements are

stored; and if the barn upstairs get too crowded, one or more animals will be turned into the cellar. It is always dark and damp; the sunlight never penetrate there; the manure is thrown down, the liquid portion runs along and soaks into the ground; in many cases it is a little lower than the yard, and more or less of the surface water flows into it. It is never drained; usually it is damp and wet all summer; the ground only dries by evaporation; and, according to Prof. Kedzie, "To evaporate one pound of water consumes enough heat to raise the temperature of five and one-half pounds of water from freezing to boiling point." Or to vary the illustration: "Suppose that a tile drain discharges constantly for a day a stream of water whose cross section is one square inch and velocity two and one half miles an hour, *this one day's drainage would save the heat equivalent to nearly six tons of coal.*"

Further, we must remember that barns are usually warm; this warmth causes a current of air upward, so that this damp, chilly air is drawn up into the barn above, where it does the most harm.

In referring to this condition Prof. Kedzie forcibly remarks: "*The evaporation of so much water renders the air over such a soil damp and chilly.*" This result is a physical necessity. This damp and chilly atmosphere has a more serious result than the simple feeling of discomfort. It has a most depressing influence on the human system, lowering its tone, enfeebling the vital powers and acting as the predisposing cause of a long list of diseases, some of them the most destructive and incurable known to the medical profession. The depressing influence of the dampness and chilliness of a water-soaked soil is not to be compared to the effect of an occasional wetting, as when we are caught in a shower, the chilly dampness of the undrained soil is persisting and unremitting, dragging us down with its cold fingers at all hours, at "noon of day and noon of night," as if we toiled and rested, waked and slept in a perpetual drizzle of cold rain. It may seem a small force at first, but its persistent, untiring and relentless pull, tells upon the strongest at last, like the

invisible fingers of gravity, which finally drag down all to a common level. This depressing influence is not developed suddenly and distinctly, but silently and secretly the sapping and mining go on till the explosion comes in sickness, suffering and the sleep that is eternal. (N. H. B. of H. page 216.)

If it is necessary to have cellars then it is most essential that they should be well drained, well lighted and well ventilated, and the manure instead of being dumped into the cellar should be carried some distance from the buildings. Care should also be taken that the well is not situated so as to receive the surface drainage. Too often the well is situated in or near the barnyard, and I have known cases, where through either ignorance or carelessness, the cows were watered from a puddle or hollow near the barn into which the surface water from the barnyard drained.

Light is another essential that is almost neglected. Good light is just as essential to the health of the "higher animals as it is to plant life." We ordinarily get too much in the habit of viewing light in barns as being simply for the purpose of enabling us to see what we are doing. Light, however, has a direct bearing on the health of the body and an even more direct influence on the causation of this special disease under consideration. Light is especially necessary, where through want of exercise, the circulation is sluggish and the system is depressed, light will stimulate the circulation. It increases the oxidation; more co is given off and the functions of the whole body are quickened and enlivened; but sunlight also retards the growth of germ life, and, more than that, the vitality of certain forms of bacteria, including anthrax and tubercle bacilli, is destroyed by the action of light. So that while light is necessary for the healthy development of the higher forms of life, it is detrimental to the lower forms of life. And yet in how many barns are we able to see distinctly. In how many barns can we see to read a thermometer without going to the window.

Nor are the above the only conditions that tend to impair the health of the dairy cow. On the average farm no care is taken,

not a single precaution is observed to prevent the health of the dairy cow from breaking down under the strain to which it is subjected. Everything is made subservient to the one sole and single object of getting a large milk supply.

One would think that common sense would teach that cows kept for months without stirring out of tracks, is, to say the least of it, an unnatural condition of things. Exercise is just as necessary for a cow as it is for the rest of the animal kingdom, yet it is something the dairy cow does not get.

Everyone knows that exercise increases the flow of blood to the muscles, and, in consequence of the greater amount of waste products carried off and the greater amount of oxygen required by the system, a quickening of the hearts' action and a quickening of breathing result. On the other hand, when little or no exercise is taken, the circulation becomes sluggish; the heart, like any other muscle, degenerates for want of use. The breathing becomes shallow, and the lungs are not expanded. When any extra strain is put upon them they are not able to do their work, and we have rupture and permanent dilation of air cells, along with weak lungs and a predisposition to pulmonary disease.

Exercise, on the other hand, causes an increased flow of blood to the lungs with an increased vitality and strength. The increased flow of tidal air in and out of the lungs will tend to prevent the slow growing tubercle bacilli finding lodgment and in this way prevent its growth and development in the lungs.

In referring to exercise, I don't wish to be understood as advocating a large field or range for the cattle to run over. I don't wish to advocate anything impractical; but I do think that the present method of confining the dairy cattle with stanchions is capable of improvement. I do think they ought to be allowed their liberty; and, further, I do not see anything impractical in any such suggestions. Any condition that affects the comfort of the animals, must affect their well being. Every one here must have seen how cows will rub and scratch themselves when first let out for water; often, even when thirsty, they will not touch the water till they have first licked themselves all over. It is

impossible to stand behind a row of cattle for five minutes without seeing one or the other make a more or less ineffectual effort to scratch the body. No animal can be comfortable confined as they are in New England at the present time.

Everyone knows that these conditions exist and are detrimental to the health of the animal. Then why are they not attended to? It is because through force of habit we have got accustomed to them we take it for granted that they can't be improved. And, gentlemen, until we pay greater attention to the common every day life of the dairy cow, we will never reach the true solution of this momentous question.

"Their surroundings make them what they are."

THE VETERINARIAN'S RELATION TO CLIENT.

By T. B. POTE, D.V.S., Terre Haute, Ind.

A paper read before the Indiana Association of Veterinary Graduates.

In this paper, gentlemen, it will not be my endeavor to present to you any startling scientific views, or practical ideas from a medical point, but to portray to you in a straightforward way another side of our work as veterinarians, *viz.*, that of the veterinarian's relation to client. The very importance of this relation is seen when we look among our professional brethren and note the rapid progress of some, while others, equally as good, and sometimes their superiors, are slow to gain that for which we all strive—a practice. Whether this power is some form of magnetism or not, it cannot be said, but it is one that can be cultivated to a very great extent, and it behooves us as servants of the people in this line, to make a close observation of our clients and the people we are among, to make a close study of them and the impressions we are making upon them. More especially is this importance of relationship presented when we see that the veterinarian in the minds of many people is not classed as a man of learning in his specified line of medicine, a man deserving the confidence and respect of an educated man as is usually given men of other professions. But instead there

still exists among many the old idea of a veterinarian being a common "hoss doctor," the extent of his knowledge being limited to a few secret receipts and an immense store of faith cures. At this date, however, we are rapidly progressing from this state in the minds of the people, but still there are many who hold to the belief handed down from previous generations. To eradicate these false ideas from the minds of the general public, there are many little points worthy of discussion, and many wherein we betray our profession in not conducting ourselves in a manner becoming professional men.

The professional man is naturally expected to be neat in appearance, and showing a pleasant and agreeable manner, for, while these may be considered little things, they are nevertheless points upon which many pay very little attention, and as a result, are wrongly judged by the people. Even in conversation, one often says something that may give rise to a severe criticism or the poor opinion of some one for years to come. We should seek society, and good or none; and to promote self-interest, it should be the best or none, for no one would question whether mingling with educated people has an elevating effect on the young man in his career. The mingling with people of culture and learning will prove far more advantageous than the hour spent in talk with horse jockeys or loafing around livery barns. While we wish the good will of jockeys and all people, still we must hold ourselves up, or even they will not respect us as they should.

There is a gifted way possessed by many of our brethren by which they are always on their dignity, and are highly respected by everyone, and it is this feature we all should cultivate. Socially, the veterinarian in his life can do no better than copy the professional bearing of the human physician. He in general is a man modest and dignified in bearing, having the reverent respect of all. He does not seek the gaiety of society, but when in society he is interested in intellectual people, and thereby gains the highest esteem and confidence of all those whom he comes in contact with. By our choice of company we show

to the public our estimate of self, and does the public more than reflect the estimate of self when it judges us by our associates?

In the mingling with the less intellectual class, I do not mean to say that we should ignore them or fail to show them every courtesy, but that we must not seek their company in preference to the more intellectual. At all times they should be treated with the greatest respect and politeness, and with this we can command their highest respect and still command our dignity, but just so soon as we breed a familiarity with this class, just so soon do we lose the confidence they may have placed in us. To this class, as well as all others, a cheerful and courteous manner should be cultivated, avoiding the cold and cheerless manner so often seen in the business man.

To all people appear only in the character of a veterinary surgeon, and make every reasonable effort to satisfy all professionally, and you are soon rewarded by being a popular man in your chosen vocation. Before everyone cultivate a professional manner and spirit, and conduct yourself in such a manner that you will have the confidence of client and the respect of our fellow-men. For the advancement of any profession, and especially of ours, we, as members of the veterinary, should pay some attention to our side subjects, so that we may be able to converse upon any subject easily and intellectually. We should improve ourselves, so that in our intercourse with people, we may readily impart to them the fact that a veterinary surgeon has some knowledge and claim to the title of a professional man.

In the presence of clients, they being made up of persons of various moods and minds, requires a very close observation to treat all in a manner satisfactory to ourselves and client. Make a study of mankind psychologically, so that when a man enters your office, you may at a glance be able to know the disposition and character of the man whom you are confronting; your client, as he enters your office, receive in that manner which will relieve him of any embarrassment and make him feel easy in your presence. As he presents his case to you, show a deep interest in it, and endeavor, by a thorough questioning, to reach

the facts of the case. The aid to self in questioning both in diagnosis and prognosis, no one would question, and as to the client himself, it cannot but give a feeling of the interest and ability of the man whom he consults. Only too often the veterinarian, as well as the human physician, asks a few questions of his client, jumps at conclusions and prescribes. This can have only the effect of the client feeling that enough care has not been used in his case, and he loses confidence, especially if the case does not do as he would want it to do. The client comes to you for benefit and expects your best endeavors in aiding him. Therefore, if you would gain his confidence and co-operation in treating the case and his recommendations, show him every courtesy and a deep and careful interest in his case.

The veterinarian's office should be in a good neighborhood and appropriately furnished. The office is well displayed in appropriate pictures, diplomas, etc., and by all means the display of a good library. This is of the utmost importance, being at hand for ready reference, and impressing the client with the fact that you are a reader of your profession and one who keeps abreast of the times. A professional man, be he lawyer or doctor, if he in his leisure hours from practice is seen in his office reading or occupied with some work pertaining to his profession, will soon be known abroad as a man well informed in his line, and no higher compliment, or one more beneficial professionally, can be passed. Let your library be conspicuously placed, and make a handy reference to sustain you in any important point that may be brought up to raise yourself in the estimation of your client.

The decorations of the walls of office with engravings which, besides being ornamental, may be used as explanatory figures, such as a diagram of defects and unsoundness of horse, chart of the circulation, the superficial anatomy of horse, etc. All these things the human physician has long ago realized the effects of on his client, and we should make such an improvement and gain thereby. The display of pathological conditions is perhaps best kept from general view owing to the fact that great import-

ance is placed upon their display by quacks. However, they should be near at hand, that they may be used to explain conditions more fully to client. An explanation by the use of pathological conditions which apply to case in question before client, is very useful and has much to do in making a good impression upon client. You gain his confidence thereby, and should case not terminate successfully, he is not prejudiced against you and will give you the benefit of the fact that the best veterinarians are not capable of saving every case.

Having reached the point of making visits to patients, what has been said in reference to relation of veterinarian to client in office holds equally good here, added to it the fact that we are in the presence of patient, and our position to be more guarded. In coming before patient we should *always* make a general survey of our patient's condition before proceeding to make our examination. Before making examination gain as full a history of case as possible from owner or attendant, which will often prevent you from making some embarrassing blunders before client. Proceeding to the examination, go about it in a systematic way: one which will indicate to your client that you are fully competent and understand what you are about. After duly weighing all evidence in case, be quick to make diagnosis. Be firm in it, and should your client request a diagnosis, give it, but guarded in all uncertain cases.

For our advantage before client, it will be found best not to give prognosis unless it should be in those cases where death is positive or a cure is beyond a doubt impossible. Give prognosis only in cases where it can be verified by patient's condition in a very short space of time. Should the veterinarian be urged to give prognosis in doubtful cases, he can modify it somewhat by giving his opinion or his belief, and by such you will satisfy client equally as well, and find yourself in a pleasanter position should patient go contrary to your opinion of it. Ever be on the look-out for the preservation of your reputation. Many times we are called upon by people to give our opinion in cases where we are not expected to be paid, and of course expected

to give our opinion to client just from general appearance of case. In such cases the veterinarian is always the loser, he realizing no profit from it, while owner has his opinion, and should the veterinarian prove incorrect, he is quoted as such before others and at his injury to reputation. In our examinations of patient we should never show in any way that we are not able to just make out the case. Always give an opinion, in defence to yourself. Show no sign that you see unaccountable conditions. These occur to every practitioner, and often being transitory, amount to nothing, and especially of no advantage to client. In the young practitioner, only too often in his extreme honesty he, by a casual remark, informs attendant and bystanders that it is his "first case," or the "first case he ever saw just like it." Such remarks only affect the veterinarian in the mind of the client and does no good in any way.

The veterinarian, in defence of his reputation, must use every precaution in giving opinions, and especially in those cases above mentioned, where the gain, if any, is to client and none to the veterinarian. When prescribing for your patient, do it in detail, and in your orders to attendant make them definite and precise. Order medicines given promptly, and on your second visit to patient, before proceeding with your examination (which should be carried out in detail and with as much carefulness as before), learn if medicines have been given as directed and other orders carried out as given. Afterwards proceed with examination, but it is very important to learn if your medicines have been given before giving an opinion of case. To exemplify this, we often enter the presence of our patients, and seeing a marked improvement remark such, afterward asking if our remedies have been given, we are informed that they have not. Thus we are placed in an embarrassing position, and have been shelled out of our own fort.

Knowing in advance that our directions have not been carried out, we can guard our opinion of case, and protect ourselves even if our medicines have not been given as ordered.

Be prompt in making your calls, even to the time of day you

call. After having done all necessary to your patient's welfare, depart and make it known to client or attendant just when you will call again. Avoid over-visiting your patient, for fear your client will suspect that you are more interested in your fee than the welfare of patient. In practice we often meet with people who wish you to insure the success of case. For your own good merely inform them that your reputation is at stake, and that you will do your duty, but if he insists upon such an assurance, and it is a case where your chances are good, charge him an extra fee and take the risk. Usually, however, it will be found much more satisfactory to the veterinarian and client to each take his share of the risk.

By the position of that of the stableman and attendants, it makes our relation with them very close in a way. Considering that it stands us in hand to be very careful in our treatment of them, showing them every courtesy which we show the owner. It is important that we should give them no offence in any way, and try to always have their good will. Some will throw away the medicines prescribed, or do anything to block the success of a practitioner whom they dislike. They are men, besides, who are in a position to assist us very much by saying many little things complimentary to us in our profession.

The subject of consultation, at first thought, may not appear on this subject, but it does, in the way of bestowing confidence in the attending veterinarian, should he see fit to call in some practitioner. The display of brotherly feeling has much to do in establishing confidence of the client and public in any professional rank. Should client request, or you deem it necessary, consult with some fellow practitioner. The man consulted is more than likely to agree with you; at least if a gentleman will protect you in his opinion of case, and you are the more thoroughly established in the confidence of client. If the practice of consultation was more commonly brought into use, there would be far better feeling among members of the profession, and the public would see us in another light. Instead, however, we have a bone of contention among us, and usually

see veterinarians disagreeing on cases if possible through a jealous motive where they are not consulted in case or interested in it in any way.

There are often cases where consultation in a case is very advisable and necessary. In the first instance, you are sometimes called to a case where there is an animal very dangerously ill, or perhaps no chance of recovery. The owner's confidence perhaps wavers, and here, if consultation be had with some good man, your views are sustained, and client's confidence in you more thoroughly implanted, from the fact that some other person of the profession has coincided with you in your views.

In the second place, often there is some obscurity in the case, and as no two men may see a patient's condition in the same phase, the result of a consultation may lead to a slight change in treatment which may benefit patient.

The consultation should be conducted in a way becoming professional men, and thus bring the veterinarian before the client and public in the true light. In consultation where you have been consulted, never see patient afterward, unless in company with the attending veterinarian. Do not seek to rob him of his client, and if the owner should request you to see patient again, it is better to refuse to do so unless the attending veterinarian has been discharged. It is far better to lose a fee than to gain the ill-will of some competitor. For the profession, it would be far better to give your competitor a good word or none, rather than give any expression of ill-will, which can have only the result of lowering the profession in the estimation of the people.

The collection of bills is one which proves itself a great stumbling-block to many practitioners, especially the young man in his early career. Its bearing upon the relation of the veterinarian to client will be seen, when we consider that oftentimes the very success of a young practitioner depends upon his success in this line. The veterinarian, besides being a professional man, must find that he must be a business man also; the presentation of bills, it is found in most cases more

satisfactory to present them promptly, proving to the client that you are a man of business and expect full pay for all services rendered. Show no feeling of compromise in the presenting of bills, and as in business, it is professional to present them promptly. Of course, this will not apply to all locations, but where possible it is very much the best, owing to the fact that most people seem to appreciate the service more soon after it is rendered than later on. Calls made to cases where no good can be done and no service is rendered, as in cases of serious injury, or where death may have stepped in before your arrival, unless client offers to pay you, it is, perhaps, just as well not to present a bill, but should his generosity suggest to him the offer of pay, it should be accepted.

All these points are worthy of professional consideration, and if carried out can only tend to make the relation of the veterinarian to his client one more agreeable and closer in that noble work, the alleviation of the sufferings of man's most noble servant—the horse.

DAIRY INSPECTION.

By F. A. BOLSER, V.S., New Castle, Ind.

A paper read before the Indiana Association of Veterinary Graduates.

MR. PRESIDENT AND GENTLEMEN:—Dairy inspection is, at the present time, a very attractive subject to the veterinarian, from the fact that he can see not only a broad field for the improvement of the health of the people of this country, but also the stamping out, in a measure, of one disease whose death roll each year is greater than was that of the late war.

That to which I refer is not the only disease that can be contracted through the use of milk and its products, but it is the most dreaded disease, as the others may terminate favorably, such as diphtheria, scarlatina, etc., which could be nearly, if not completely prevented, by strict sanitary measures.

At present we are handicapped in this state for want of proper legislation, appropriations, etc., by means of which all

cattle intended for breeding and dairy purposes might be inspected.

Several of the Eastern States have legislation providing for the inspection of all dairy cattle; and the number affected are found to an alarming extent.

The officers of the State Board of Health, at their last meeting, passed resolutions, asking that the next legislature pass suitable laws, and make sufficient appropriation, to provide for efficient dairy inspection. We, as veterinarians, will be only too glad to extend any aid that may be in our power, not only in getting proper legislation, etc., but in carrying out the inspection. I would suggest that the appropriation be sufficient to compensate owners for all affected animals destroyed, from the fact that that would be an incentive to the stock raisers and dairy-men to have their herds inspected.

Some eastern dairymen, who prided themselves on having healthy cattle, were very much surprised to find that, on using the tuberculin test, and having the animals that showed the infection slaughtered, upon post-mortem examination that a very large per cent. had tuberculosis.

One of the strongest points in favor of dairy inspection and stamping out of tuberculosis, is the fact that one out of every eight persons dying in the United States die from that disease.

In some counties of the old country, where the milk of the ass or goat alone are used, consumption is unknown. Through the energetic action of the Bureau of Animal Industry pleuropneumonia was completely eradicated from the United States; the eradication of a disease whereby the stock raisers of the United States were saved millions of dollars. Thus was eradicated a disease that was not communicable to the human family, either by the use of the flesh or the milk and its products.

If such strenuous efforts were made to prevent the spread of a disease that was simply the cause of a pecuniary loss, why should not a more determined effort be made to stamp out a disease which costs this country annually the lives of thousands of its best citizens?

To accomplish this measure we should first have proper legislation and sufficient appropriations, as heretofore mentioned, to allow the Sanitary Board, which should be composed mainly of veterinarians, the power to inspect and destroy all animals found to be suffering from tuberculosis in any form, upon remunerating the owners of such animals for the same. All dairy and breeding establishments should be inspected a stated number of times annually, and their sanitary condition carefully examined as to cleanliness, drainage, etc., and no new animals be allowed to be used in a dairy without first having been examined.

The inspection should not end with dairy and breeding cattle. The number of families who own one cow and supply a number of families with milk are innumerable, and in the majority of cases the sanitary surroundings are of the worse kind. They, too, should be inspected. There should be a chief inspector, and a sufficient number of assistants to co-operate with the board of health of each county. Each county board of health should have a veterinarian as one of its members, who would be the local inspector of that county. He should inspect all animals, and look after the sanitary conditions of all dairys, and make his reports to the chief inspector, as the legislature may require.

It should be the duty of the chief inspector, either personally or through his assistants, to examine all dairy and breeding establishments, together with the local officer, at least twice a year. The inspection should be compulsory, and the sale of milk and its products from any animal not having a certificate of inspection as sound, should be prohibited under severe penalties.

The people do not realize the danger which might be overlooked by not making a thorough inspection; in fact, they do not realize the enormous dangers of using dairy products from animals afflicted with tuberculosis, many of them not knowing that consumption is communicated in that way; nor do they realize that there are many other troubles originating through dairy products, from the lack of proper sanitary conditions.

Dr. Boor, of Muncie, relates a case as follows: "On April 10th last, accompanied by the State Veterinarian, Dr. Stull, and Live Stock Sanitary Commissioner Hall, they visited a case of suspected tuberculosis on the farm of Mr. A——. Upon examination, they found the animal to be in the last stages of tuberculosis. The state veterinarian ordered her destroyed, which was done, and also her calf, which was likewise affected, was at the same time destroyed. About the time the cow was destroyed Mrs. A—— was taken sick, and is now suffering from a well-marked case of consumption;" whether having been transmitted by the cow, or whether merely incidental, cannot, of course, be stated; but at the same time there are probably thousands of cases similar that have been passed unnoticed. It is a well-known fact that thousands of children die every year with tubercular bowel trouble, caused from the milk obtained from tubercular animals, the delicate mucous membrane not being of sufficient vitality to throw off the dreaded germ. It is also true that you and I, in a debilitated condition, could not throw off the germ of tuberculosis.

It is hardly worth while for me to continue the subject any further, as you all realize the danger as well as I; but I would suggest to all of you that you confer with your representatives and senators from your districts, and impress upon the mind of each the necessity of legislation by educating him. Show him the danger arising from this disease in cattle, give him literature on the subject, and let him come here next winter scared to death.

TETANUS.

BY W. CARNES, V.S., Washington, Ind.

A paper read before the Indiana Association Veterinary Graduates.

It is a pleasure that I am permitted to stand before you on this occasion, for the purpose of stating frankly my views regarding this wide and important, although obscure disease, which has prevailed beyond our comprehension. Until recently,

its cause has not been definitely understood. For years past our educated and experienced men, to whom I am not a circumstance, have studied, microscopically, the minute details, extracting the cause, as you have laid before you, due to the direct influence of a micro-organism, localizing and inhabiting solely that position of the nervous centers, namely the spinal cord.

This fact has only been recently established, and until then it was a mere supposition and a misnoma, without the least shadow of foundation. However, if this be the case, is it at all reasonable that if this germ thrives as taught us, exclusively upon the albumen found in the cord where there is none—in comparison to that found in the blood.

Taking this for granted, is it not a broad assertion, as well as frivolous, in which one so deliberately attempts to picture in type, that these germs are invariably present in the spinal marrow, and cannot, under any circumstances whatever, be found elsewhere? Then you will observe this subject which I have chosen is indeed complicated, and after due consideration I cannot conscientiously believe and endorse the theory that tetanus is due to the direct influence of this spiral club-shaped germ, but on the contrary, possibly to their toxic ptomaines. However, this has not been corroborated. Nevertheless different views and ideas have been daily advanced, sufficient to thoroughly convince me that it is absolutely impossible withal to entertain the idea that tetanus is contagious and infectious, and can be transmitted by inoculation.

Adhering to the belief confirmed by our ablest authorities, that prior to death, under no circumstances whatever, can this disease be conveyed in any manner. This view should be considered discriminatively, for if it were due to a germ found around old hair factories, in the dust and debris of the dead, then it is remarkably true that in this particular tetanus would be more prevalent, and in some sections an epizootic. Then by observations these facts are brought to bear, that the virus of tetanus is neither in a fixed or volatile form. Circumstantially this is true, whereas you cannot ignore a positive fact, but con-

sider well and weigh carefully before you condemn. Again, if these germs, so remarkably few, exist and gain access to the body through the circulatory and lymphatic system by wounds and abrasions, and not through the respiratory or alimentary canal. Conservative, as you are, it would be utterly impossible and absurd to entertain an idea of this kind, as experience has taught us differently, and if you do not regard your opinions worthy of mentioning, and reserve no confidence, fate will decree you. For reference we will touch carefully the Koch theory and regard the great excitement of such a marvellous and wonderful discovery of the bacillus tuberculosis, which took the entire continent by a storm of surprise, swaying the humble and most able intellectual faculties of mankind, who were competent and capable of judging, but induced, under the circumstances, to coincide, for at that time it was unquestionably proven the Koch theory was undoubtedly correct, and its treatment so thoroughly substantiated that it was beyond our contradiction. However, the Russians have exclusively abandoned this theory, which received, but did not deserve, one iota of praise, and if this be the case, surely it would lead us to suspect and believe that some of our spontaneous experts could cultivate, describe, and beautifully picture such micro-organisms superior to nature's comprehension. Then if the tubercular theory and treatment is questioned, I persistently contend that others could be. My friends, take into consideration that there are people in existence to-day that are seeking notoriety and prominence otherwise than by facts, presenting to us this germ misnomer, perhaps an imaginary foundation deprived of conscience. No matter how deliberate or weak we may be under the laws of our constitution and merciful Creator, we inherit and reserve the right, as individuals, to render and express our sentiments in a conscientious and justly manner. At the present age we are taught that the earth moves around the sun and moon, which is evidently true, according to our astronomers. But friends, it is a doubt, in my mind, whether or not the germ of tetanus ever or will move within the system of an equine previous to death.

If so, God grant that I might some day be the happy possessor of a microscope, which will not only enormously magnify, but make walk in single file, these germs as soldiers, that I might see them.

Unless I cannot gratuitously endorse their views, whereas we are willing to sacrifice our own lives. Knowing what we do, thereby taking anything but precautions as to isolating or antiseptics, and regard abrasions of said individual in attendance with impunity, as he careth nothing for fear of transmissions or the existence of these germs, and can treat accordingly upon these basis.

It is compulsory for us to admit that an autopsy of the succumbed has revealed spiral club-shape germs which are very scattering indeed, existing as they do now, whether or not these germs are found prior to death, or whether it requires the death of the patient to produce them, is the question which has often agitated my mind. Were it that they were present within the system before death is yet to be determined, whereas if we could extract the blood of an affected animal, and transmit by inoculation, certainly this disease could readily be conveyed. However, this theory of contagion under such conditions cannot be proven, either by statistics or experimental tests; and again, we have many other diseases which are closely allied symptomatically, such as hysteria, uremic poison, and especially an overdose of strychnine; in this instant, with a snap diagnosis, could you definitely distinguish, render and impart an opinion satisfactory to your own mind, without an inquiry of investigation or the presence of said micro-organism.

However, my insinuations must not be misconstrued, as I allude principally to tetanus idiopathic, and positively contend that it is detrimental to our medical profession. Not only do I pride in the liberty to denounce, but it is with pleasure that I so conscientiously condemn the absurdity, and deem it a faulty and incorrect term, which should not be tolerated, but discarded from our veterinary science.

Before you are my sentiments, prejudiced as they are, in

which I have fairly dealt with this subject, and consider it useless to expaciate further or discuss the minute details and humiliate the microscopical pathology, except the exceedingly rare trace of this exhumed and post-mortem germ. Never to date has a microscopist publicly announced or satisfactorily proven that he was able to find any lesions of importance, and this being void it might lead one to suspect that they are inert, or we would surely have softening and degeneration of the surrounding tissue. Take into consideration the obscurity, and possibly you will yield sufficiently to bear me out in some of my remarks upon this mysteriously and difficult subject. No doubt cases have often come under your observation, with symptoms aggravated by excitement totally void of abrasions, which compelled you to diagnose tetanus idiopathic, in order to corroborate our text books ; on the other hand, let there be a wound ; refer to your treatment, especially the former, and did you ever treat this disease antiseptically, or with the view of destroying any micro-organism whatever? Emphatically no! it is the least of our intentions, as our treatment depends solely upon nerve sedatives, quietude and support of the system. On the contrary, if these germs were present as in septycema, there would be some effort in this respect, if only a desired act of determination toward their destruction in tetanus, is no more nor less than numerothesis, or a degeneration of the motor functions, due to a morbid excitement of the motor nerves, of which the sensory are of a secondary character, more prevalent in hot than in temperate climates, influenced by cold and wet weather, choosing for their victims the vigorous and masculine sex ; this I cannot account for, unless one would believe that tetanus was an effection, peculiarly adapted to a certain class of animals other than a disease known as specific and contagious.

Then our clydesdates, with their sluggish circulation and inactive nervous centers in a tetanic locality, would behoove us financially, as veterinarians, to immediately emigrate. Viewed in this light, there seems to be no deffinite or fixed foundation other than a rumored supposition approved by men evidently

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trying to gain notoriety and prominence of consideration in a bacterial outcast of fine intellectual attainments, sufficient for us to sway and vanish our views, which are possibly, in a measure, correct. Nevertheless this germ theory deserves to be praised, in which it has been an advantage and highly beneficial to the medical science, and without a thorough knowledge of bacteriology, it would, indeed, be difficult for us to practice successfully the art and science as veterinarians.

Then these approximated views, regardless of proof sufficient to sustain any investigation to which it might be subjected, are to be regarded, perhaps, as an imposition, otherwise than to receive our endorsements.

In conclusion, I think it policy to refer to the metostosis and the death pending, as to its actual cause, knowing that a short time before death the temperature is enormously increased; then death quickly ensues, which leads us to suspect that within the system there is something of a degenerative nature, which compels us to believe that tetanus is a septic character. Then we must respond satisfactory to the fatality and sudden death. Take the toxic conditions of the muscles, due to the periferal ends of the exposed nerves, which would cause excruciating pain sufficient to increase the difficult and rapid respirations, so as to prevent the required amount of oxygen for the supply of the system, then it is not beyond our knowledge of comprehension that we could easily have death from the absorption of carbonic acid gas, or mechanical asphixia. Again, the sudden changes, due to the rapid burning of the tissues, is corroborated by the intense thirst and bodily heat which would undoubtedly increase the temperature to such a degree that death would quickly ensue from degeneration and "coaglation of the albumen contained in the blood," after which life is utterly impossible.

If this is doubted, then our physiologists are wrong. However, I believe them correct, but must admit that cases are on record where the temperature ranges comparatively high during the advancement of certain diseases. Nevertheless we must observe that they are of a fatal nature; then if you feel disposed

to discard my views upon this subject, you will be compelled to ignore and exclude under such circumstances our able and competent physiologists indiscriminately, for we as students, have no right whatever to contradict the degree of temperature, or dictate in any case with perhaps depreciated and incorrect thermometers as are no doubt in use to-day, owing to their cheapness in value. Remember we are taught that 110° F. will coagulate the albumen, after which life is no more. Then our increased temperatures, from a physiological standpoint, will not undergo the test. If it is possible that this germ prevails, and is the sole cause to induce tetanus idiopathic, surely in this instant it must be hereditary, and lies dormant to invade such injuries void of abrasions, thereby exercising their power of destruction at will.

We frequently have tetanus, the result of a simple fracture; then if these germs gain access to the system only through an abrasion, not by the respiratory or alimentary canal it must be hereditary, and lies dormant, or emphatically we do not have tetanus due to its direct influence. Humble your opinion and remember we could easily have death from excessive constitutional disturbance, or perhaps septycrema, in which we invariably find micro-organisms closely allied, and assuming comparatively the same shape as those of the "*bacillis tetni*." Then if tetanus is of a septic nature, and due to a micro-organism, it is absolutely the only disease on record which is not treated in some form or other antiseptically, with the view of destroying said germ, then we must take for granted that this little fellow exists, thrives and dies, and is generated likewise, as we have no other history of his life until after death, which might present its self in such a way, that one not exactly acquainted, would perhaps imagine these germs were distantly related to the exhumed Egyptian mummy; whereas it is necessary that both are to undergo practically the same process for their productions, identified by their history of teachings and recognized by their presence. Circumstantially I believe the latter are much more plentiful than these germs of tetanus.

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Then if it is due to a microbe, we must procure such sanitary measures in order to avoid this dreaded malady and view from a critical standpoint, in which there is neither honor nor fame attached, and upon which our lives are pending. Thanking one and all kindly, the subject is with you.

THE EXTERNAL CONFORMATION OF THE HORSE.

BY PROF. E. A. A. GRANGE, V.S., Michigan.*

(Continued from page 426.)

Between the knee and the fetlock we have a part familiarly known as the canon (Plate I, 32); it is composed principally of the large canon bone in front, with tendons, called the back tendons, behind. In shape it should be flat from side to side, the back tendons should stand boldly out behind, leaving an evident line of demarkation between them and the front part of the region, they should be hard, almost bone-like, to the touch, and free from all puffiness. The posterior part of this region may or may not be clothed with long hair, according to the breed or fashion of the times. The skin covering the tissues should lie close to the bone and tendon, producing the sensation when handled that all is skin and bone. Below the fetlock joint and above the hoof we have a region designated the pastern, which is a most important part of the leg, it being the seat of that very troublesome disease, ringbone. Besides examining this part for disease, we should regard its shape and direction according to the uses the horse is intended for, and if it is to be used as a saddle horse the kind with long oblique pasterns are more elastic and graceful in their movements than the short upright sort, which are often unpleasant to the equestrian on account of the concussion produced by the more or less upright columns of bone. Our experience has been that we usually find straight shoulders in horses with upright pasterns. In horses used for heavy coach or draft purposes the pastern may be comparatively shorter, stouter and more upright than those used for

*A reprint from Bulletin 110, Experiment Station, State Agricultural College.

saddle or light road work, but very straight pasterns are not desirable, in our opinion, in any class on account of the concussion they are liable to produce, but even the long oblique kind may be, and often are, overdone; in them the strain upon the parts is liable to produce an irritation that in its turn will cause ringbone.

The pasterns of the fore legs are usually a little more upright than those of the hind leg. This being the case, we think it one of the reasons why ringbone is more prevalent in the hind than the front pasterns.

Continuing down the leg we eventually come to the foot, a region which has been given a great deal of consideration in all ages and by most writers upon equine topics; indeed it is doubtful if there is any one space in the whole animal which receives so

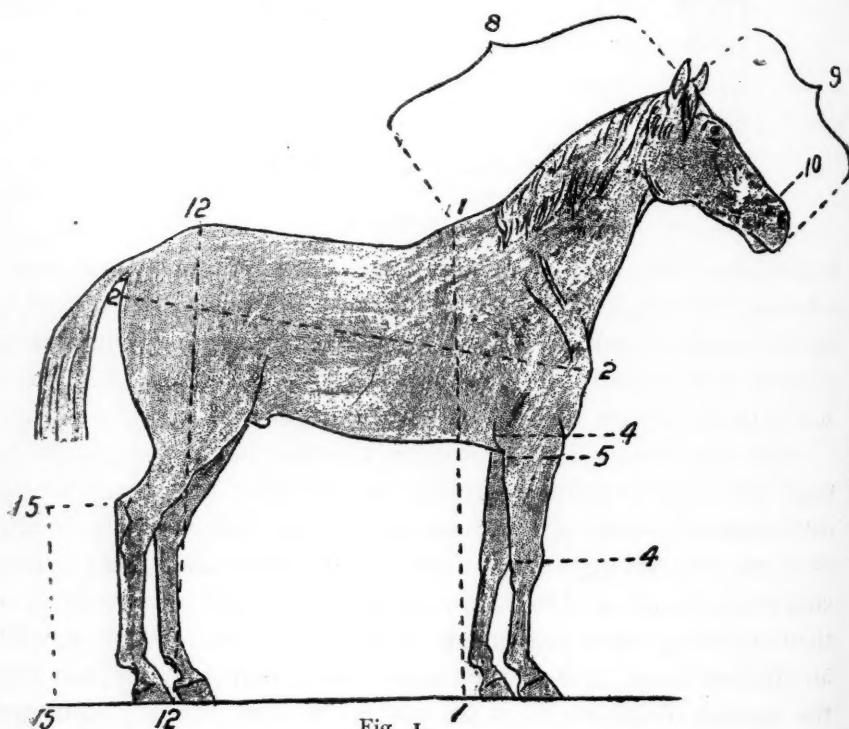


Fig. 1.

PLATE NO. 3.

Points which are measured from and to, are indicated by the numbers on the above figures.

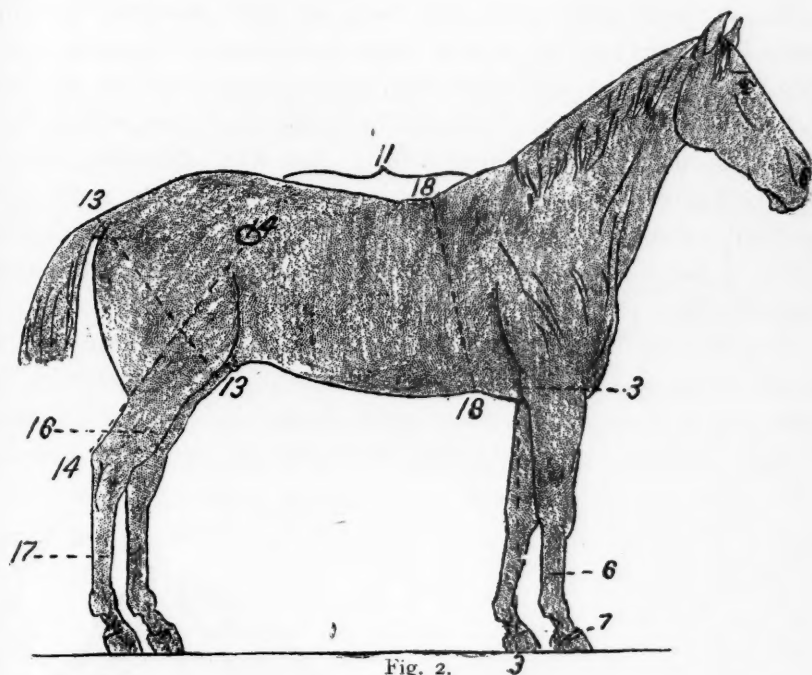


Fig. 2.

PLATE NO. 3.

much attention. We hear the expression "no foot no horse" wherever we go, showing in some measure that a good foot is held in high esteem by all admirers of a well formed animal, and a horse with a badly formed one is often dubbed a plug or a screw in the stable lore of the present age.

The expression is so common that we have endeavored to trace its origin, but have failed to discover the exact source from which it came, so we have concluded that from its being such an old saying it must have originated long before iron shoes were used, and in those days people did a large part of their traveling upon horseback; under such circumstances, with an unshod horse, it does not seem unreasonable to suppose that the horse's hoof would wear out on a long journey, and the creature soon become tender as well as lame and eventually unable to travel; the rider would naturally look for the cause of the animal's inability to progress in the usual way, and on ex-

FIG. 1.

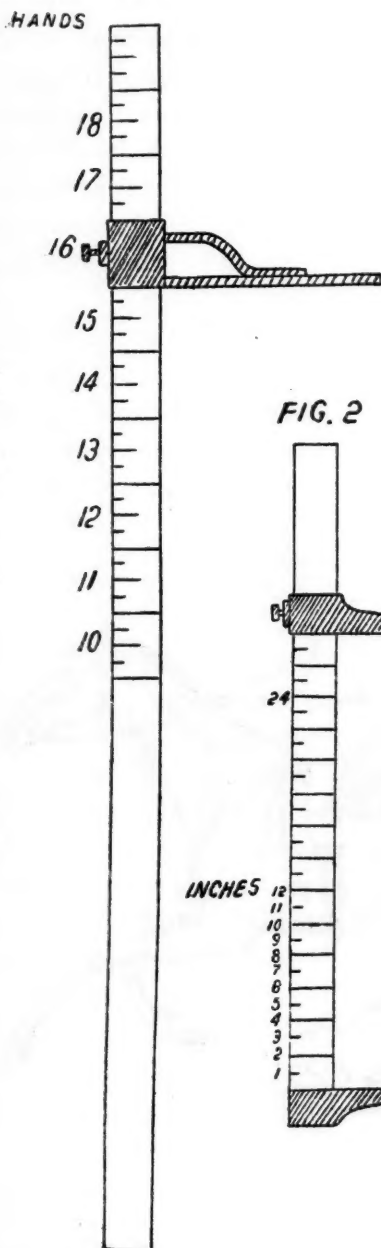
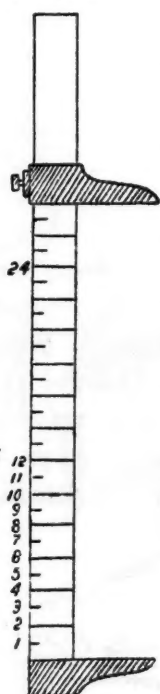


FIG. 2



CONVENIENT FORM OF INSTRUMENTS FOR MEASURING HORSES.

The height of a horse is usually measured by hands, a hand being 4 inches, 15 hands being just 5 feet, or 60 inches. Fig. 1 is convenient for measuring the height at the withers and croup; fig. 2 for measuring the width of chest at shoulder points, width of hips, width of forehead and length of head. Other measurements are more conveniently made with an ordinary tape line.

amining the foot and finding it worn out, *gone, as it were*, might he not very appropriately exclaim "no foot no horse!" because he would have to abandon that animal for that journey at all events. When we come to consider what a number of diseases attack the foot, and what a large majority of the cases of lameness which we are daily brought in contact with have their origin in the foot, we can begin to realize why this part should be regarded as being of so much importance, and the study of *pedology*, or science of the foot, so interesting to those who are engaged in any way in the equine industry.

The foot (Plate I, 35) may be regarded as that part embraced by and including the hoof, the upper portion of which is called the coronet (Plate I, 36). We find, on comparing the front feet with the hind ones, that the former are usually if not always larger and flatter. This is no doubt owing to the fact

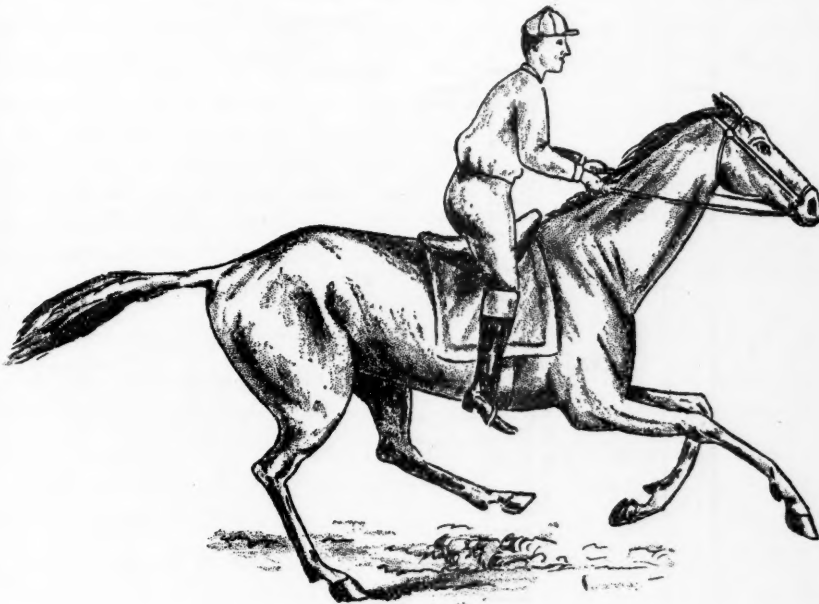


Fig. 1.

PLATE NO. 5.

From an instantaneous photograph. Horse in rapid progression, the entire weight of the body being on one hind foot.

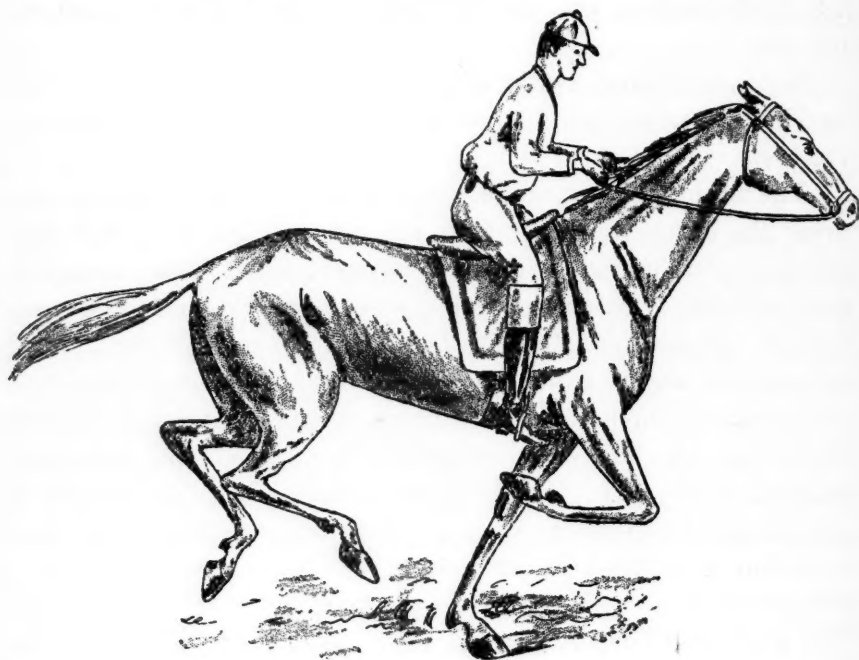


Fig. 2.

PLATE NO. 5.

From an instantaneous photograph. Horse in the act of rapid progression, the entire weight of the body being on one fore foot.

that they have to bear more weight; in some horses considerably more, for instance, the actual weight of a Shire stallion, as I took it, was 1580 lbs; the front feet were then placed upon the scales and brought the beam up at 940 lbs.; the animal was then reversed and the scales indicated 634 lbs., showing a difference of about 306 lbs. Several other ordinary farm horses were handled in a similar manner with the following results, to wit:—

No. 1, a gelding, entire weight 1180 lbs.; front quarters, 690 lbs.; hind quarters, 510 lbs.; difference in favor of front quarters, 180 lbs.

No. 2, a mare, entire weight, 1280 lbs.; front quarters, 720 lbs.; hind quarters 560 lbs.; difference in favor of front quarters, 160 lbs.

No. 3, a gelding, entire weight 1220 lbs.; front quarters, 660

lbs.; hind quarters, 552 lbs.; difference in favor of front quarters, 108 lbs.

No. 4, a gelding, entire weight 1150 lbs.; front quarters, 630 lbs.; hind quarter 3,510 lbs.; difference in favor of front quarters, 120 lbs.

The slight discrepancy in those cases of the foregoing between the entire weight and the sum total of the front and hind quarters, is no doubt owing to the displacement of the centre of gravity in the different attitudes, which could scarcely be controlled. When the animal rests with its foot upon the ground the part we see is called the wall (Plate II, Fig. 1, 10); it is composed of innumerable horn fibres, which run parallel to each other, and are held firmly together by a tenacious substance peculiar to the part. The external surface of the wall should be smooth and free from grooves or fissures running in any direction; in outline it should be circular upon its lower border, having a somewhat smaller circumference at the upper or coronal edge. The wall should be moderately deep and strong; if shallow the foot will be flat, a variety which is sometimes a perpetual nuisance on account of often being affected with corns. The wall should not be contracted at the heels, as this form is usually associated with coffin joint lameness or some other chronic disease of the foot. The sole of the foot should be concave rather than flat, and that pyramidal shaped cushion, the frog, which appears as if let into the sole behind, should be well developed.

The hind feet are invariably smaller and their soles more convex than the front ones; lameness in the hind foot is of comparatively rare occurrence. Many persons believe that feet with dark colored horn are stronger, and able to stand the wear and tear of hard work better than the light colored ones, but our experience has failed to demonstrate the truth of this idea. The white foot will show the invasion of the part by inflammation more perceptibly, which we think is the cause of disease often being noticed in the white one when a similar complaint would, and often does, pass unnoticed in a dark colored foot.

The hind leg.—The haunch or upper thigh (Plate II, 15-15) is a region that is somewhat difficult to define as far as its exact limits are concerned, for we find it running imperceptibly into the croup at one extremity, and into the gaskin, or lower thigh, at the other, so we will have to draw a little upon our imagination and say that it is situated between two lines, the one drawn from the upper part of the point of the hip to the upper part of the point of the quarter, the other drawn from the stifle joint in an oblique direction downwards and backwards following the lower border of the prominence formed by the large superficial muscle on the outside of the leg (Plate I, 13). In examining horses as to the excellence of the haunch we should first of all see that the muscles stand boldly out. In the the horse where these muscles can be recognized independently of one another, we ususally find an animal that possesses a great deal of strength and endurance. Then we should view the animal from behind to see that the hips and quarters are broad. Broad hips are not only indicative of strength but are an immense advantage to the brood mare in the act of foaling, because they indicate a large passage for the foal to pass through, consequently the act of labor can be accomplished with more ease and less risk.

The gaskin, or lower thigh (Plate I, 15, Plate II, Fig. 2, 16-16), is the part below the haunch and above the hock; it is important that the anterior and external part of it be well developed, because that part is composed of a group of muscles which are concerned in carrying the body past a center under certain circumstances. If we examine other instantaneous photographs (Plate V, Fig. 1) we will find that in certain attitudes of progression the entire weight of the body is upon one hind foot, and these muscles are largely concerned in throwing it off or carrying it past the center, hence the necessity for a good horse to have a lower thigh composed of tough, hard muscles, and if they stand boldly out all the better, for then the region becomes more attractive.

The hock (Plate I, 16) is a very important joint, situated between the lower extremity of the gaskin and the upper end of

the shank bone. It has been said that a large majority of cases of lameness in the front legs were due to some disease of the foot, but this order of things is generally altered when we come to the hind legs, in them the origin of most cases of lameness, is very often of a most intractable nature as far as yielding to treatment is concerned, unless it is judiciously dealt with in the very earliest stages; hence the necessity of selecting animals with well formed hocks. The variety of hock which gains most favor is the one which is deep from before backwards and broad from side to side; the skin should be in close contact with the hard tissues underneath, doing away with that soft meaty appearance we sometimes meet with. The superfluousness of the joint should be free from large soft puffy tumors, especially after the colt-hood days. The hock joint being of so much importance (as it is so liable to become affected with disease), it may be an advantage to the student to make a few suggestions here as to methods of examining it, for which purpose it is very convenient to regard the joint as having four surfaces—front, back, inside and outside. To examine the part thoroughly, both hind feet should be placed together, and in line as we view them from side to side; the examiner should then stand, say three feet out from the point of the shoulder, and make an ocular examination of first one joint, then pass to the other side of the horse and examine the other; in doing this care must be taken to see that both joints are alike, especially at that point where the front and inside surfaces seem to meet. If we find a prominence in one that does not exist in the other we may be tolerably certain that a bone spavin exists in the one with the prominence. In some instances it is difficult to make up the mind by this method, in which case an examination made from between the fore legs looking backwards, and examining first the inner aspect of one hock and then the other in quick succession, this will sometimes help us to determine with tolerable certainty; if we are still in doubt, we may get an assistant to hold up one front foot, and manipulate the joint with the fingers, using the eyes at the same time. Should the part be thickly clad with long or furry hair,

saturate the surface with water, which will cause the hair to lie close to the skin, and this will sometimes reveal enlargements which would otherwise pass unnoticed. It may be advisable to saturate the hair of both hocks. The saturation of the hair of the parts answers very nicely in examining the pasterns for ring-bone or other superficial diseases dependent upon a certain amount of enlargement in any part of the body if the hair is long. While the assistant is holding the fore foot from the ground, the front of the hock may be examined for that soft, puffy tumor known as *bog spavin*, and the sides of the joint for *thoroughpin*; at the same time the outline of the back of the joint may be scrutinized to see if any remarkable deviation from a straight line exists in one hock that is not in the other; if it does, the probability is that a *curb* is the cause of it. It must be remembered that similar diseases do sometimes exist in both hocks at the same time, in which case it may be necessary for us to be familiar with the anatomy of the parts in a manner that can only be obtained by dissection or careful examination of the dissected parts, before we can distinguish between the natural formation and disease—for instance, we have *curby-hocked* horses, a style of conformation that may cause a doubt as to the existence of disease in the minds of those who have not given this subject a good deal of careful attention. This suggests the commendation of the growing tendency to have a veterinarian in the show ring to decide cases which properly come within the jurisdiction of an expert. The question as to why the hock joint is so often the seat of lameness or disease often claims our attention, but if we examine it from the anatomist's standpoint we will at once see that it is a very complicated joint, really made up a number of little joints, and like other complicated things is quite liable to go wrong; but this is not all, for if we watch a horse in motion, fast or slow, backing or advancing, we will see that a more acute elbow is formed by this joint than at any other part of the leg, and in such a manner that it has to bear the strain of two levers, so much so that we might reasonably wonder why it is not oftener deranged; this, perhaps, may be explained by the

fact that one of the levers, at all events, works upon the jack-screw plan (which may possibly have something to do with the origin of the term jack spavin); for evidence of this we have only to watch a horse drawing a load over a surface where the footing is a little slippery, and we will observe that the hind foot turns around in a somewhat circular manner as if boring into the ground.

(To be Continued.)

REPORTS OF CASES.

SPASM OF THE LARYNX

By M. U. TRUMBOWER, Sterling, Ill.

Aug. 14, 1894, I received a telegram from W. C. Galbraith, V. S., of Wheaton, Du Page County, Illinois, requesting my immediate presence at Wheaton to investigate a very fatal disease among the horses of Mr. H. B. Patrick. I arrived at 10 A. M. on the 14th, and found five horses dead, all of which died within six hours time on the previous day.

Mr. Patrick made the following statement: "At 6 A. M. he sent one of hired men out into the field to bring up one of the mares for work. The man returned and reported that the animal was ailing. About an hour later Mr. Patrick reached the field and found this animal and another one dead, and a third one breathing hard with froth and water running from the nostrils. He immediately sent to town, one mile, for Dr. Galbraith, who arrived at 9 A. M., and found three dead in the field. One four year old mare, that he had been treating for a sore neck, appeared indisposed. Dr. Galbraith felt her pulse and considered it normal in frequency and volume. He then proceeded to make an autopsy on one of the dead animals. At 9:30 the four-year old mare was noticed to cough violently several times, and a frothy discharge, mixed with serum, came from both nostrils. Soon this discharge became excessively profuse, and the breathing gradually more impeded. She succumbed to suffocation at 11:15.

Dr. Galbraith attempted to administer chloroform by inhalation, but she could not bear it. He then administered bella-

donna and antim et pot-tärtra. He thinks the latter gave slight relief for a short time.

The fifth case manifested symptoms similar to the former one and she died at 12:15 P. M.

The symptoms of all were exactly alike—discharge of serum and white froth from the nose and mouth, and difficult breathing.

Dr. Galbraith made a post-mortem examinations of two, and found the stomach, liver and intestines perfectly normal. The lungs were greatly distended with air, and, on cutting into them, large quantities of froth exuded. There was no evidence of active pulmonary congestion; no discoloration of the sputum post-mortem.

I made a post-mortem examination of the bay mare, the last one that died, twenty-two hours after death. I found all the organs as described by Dr. Galbraith in his cases, but, on exposing the larynx, we discovered an extraordinary intense congestion of the muscular tissue of that organ, both the intrinsic and extrinsic muscles; also great blood extravasation into the cellular tissue surrounding the larynx. The mucous membrane of the larynx was highly congested, the discoloration extending into the pharynx and fauces.

Diagnosis.—Enzootic spasm of the larynx. What caused it? Mr. Patrick is a large landowner and keeps all of his livestock in the very best condition. His stables are situated on high ground, and all the stock obtains water from a trough near the barn, fed by a wind-pump from a deep well. These five animals, consisted of three mares with foals at their side, and one old mare and a two year old mare. One of the colts became slightly affected, but recovered.

These animals have been in a seven acre field all summer, only one of which was worked during haymaking this summer. An oat stubble field was thrown open to them three weeks ago. For five weeks there has been no rain until last Saturday the 11th rain fell to soak the ground about two inches. The temperature was even, from 80 to 90°, for several weeks. What is more plausible than to believe that the slight warm rain on a parched soil favored the rapid development of some fungus.

growth which those horses ingested with their food, and that the toxic effect induced a persistent laryngeal spasm terminating in death. A number of horses and colts are in another field half a mile distant from the fatal one none of whom have become affected.

This, I think, indicates that the cause is local and confined to this one field. This pasture lot and oat stubble is remarkably free from weeds, entirely devoid of trees of any kind and only has a few rods of osage hedge on one side. It is seeded in tame grass, and is well drained. During the past four weeks these animals have been fed partly on hay and oatrakings, as the grass in the fields is all burnt up by the prolonged drought.

REMOVAL OF CAULKBOIL BY ELASTIC LIGATURE.

By J. C. MYERS, JR., V. S., Cincinnati, Ohio.

About thirty years ago the elastic ligature was introduced in human surgery rendering efficient services. Gradually it found its way into the veterinary field. Why it is that this practical *modus operandi* has not become more popular in our profession is not clear to me. I do not want it understood that it is due to inactivity, no, no, the veterinary literature of the day gives evidences that we have untiring and able workers who keep abreast with the human medical and other esteemed branches of science. Microscopy and antiseptic doctrine have wrought great changes in veterinary science and if it has been at the expense of practice, the development in these directions will soon equalize matters.

Well known authorities entertain different opinions regarding the use of the elastic ligature. Pench and Toussaint prefer it to any other. In comments on an article from a French journal on this subject, Hering pointed out the advantages attained by Rossignol and Nocard in various operations by means of this contrivance and observed that the elastic ligature seemed to gain favor with veterinarians.

Fleming, in his operative surgery, regards this expedient as a useful surgical auxiliary, and, in a plain, concise way, presents its practical application; while Vogel, Liautard and Bayer,

though they acknowledged the good points of this procedure, would seem it a mistake to discard the knife. Dieckerhoff employs the hemp string for the ablation of enlargements with best results.

In an article entitled "Removal of Caulkboil by Ligature," in in Vol. xi, page 121 of the AMERICAN VETERINARY REVIEW, an allusion was made to the effect that I would repeat the experiment which I did, and having attained gratifying results I will briefly describe two cases.

If the whole process consisted simply in applying the ligature, any one, with a little dexterity, could perform it, as there is no anatomical knowledge required, but should a layman attempt the ablation he would soon learn that more than general knowledge is necessary to finish the real task, namely, the healing part, consequently would be obliged to call in a specialist.

Case 1.—Two years ago I treated a dray horse, middle age, with fistulous withers and caulkboil. Whether the fistula originated from 'the ill fitting saddle cushion alone, or whether the caulkboil on the left elbow, hard and suppurating for over five months had anything to do with it is a question, though it is improbable. At least the owners claimed to have noticed some winding blood vessels (presumably lymph vessels) running up and down the shoulder toward the tumefied and slightly suppurating capped elbow, indicating a metastatic development. A therapeutic interference was not necessary, as there was no general morbid symptoms present beyond a mopish cautious movement in turning the body which aroused some suspicion. Upon relieving the withers of its corruption and decayed tissue, the wound was washed, dried off carefully and well moistened with solution of resorcin 3 in 5 twice per day. In six days the horse made a fair change for the better, so that his behavior and the aspect of the sore withers permitted an additional encroachment on his organism, that is the application of the elastic ligature at the base of the caulkboil which I encircled twice with a rubber tubing of 4 millimeter diameter, stretched it nearly to its full extent and tied the ends in a double knot. The tumor dropped off on the twelfth day; during this time it became somewhat larger

and warmer, and a moderate increase of sensitiveness was also observed. The detached growth left a raw, conspicuous space of about 5 inches in circumference and as smooth as if cut off with the knife. Expecting this spot to be elevated soon with swollen muscular tissue I had it dampened twice per day with pure phenylic acid. Already, on the third day, I noticed the raw, smooth surface becoming convexed, proof that the phenylic acid would not keep the new granulations within proper limits. I then touched the protuberance lightly every morning with caustic potash and had the phenylic acid applied every evening until I found the superabundant growth of flesh arrested. From now on until cicatrization was complete, which was about the eighth week, resorcin solution was used. Very likely if dermatol (which could not be obtained at the time) had been applied mornings and the resorcin evenings it might have scarred off a little sooner. By the sixth week the wound had grown so small and attracted so little attention that the horse might have been put to work had it not been for the fistulous withers.

Case 2.—In the latter part of September last, I was called to a villa about four miles distant, to see a 20 year old carriage horse with caulkboil on the right leg of 3 weeks existence, the size of a man's fist, open below and discharging a small amount of pus. I had some cotton saturated with a solution of creoline introduced into the cavity once per day and the exterior bathed with warm salt water. A continuance of this treatment for two weeks improved the condition so much that I instructed the groom to keep on as long as the horse was doing well.

On March 8th, I was again summoned to see the same horse. Found him reduced conditionally, lame in the right foreleg (navicular.) Elbow tumor enlarged, apparently sarcomatous, occupying the lower and inner third of the shoeboil cavity.

As the owner had been absent all winter the horses received but little attention. The day before my visit the team were driven twelve miles, the first trip in months; no lameness was observed, however, nor did the coachman meet with any mishap that would tend to cripple the horse.

After a lengthy hydrotherapeutic treatment of the foot, the horse recovered from his lameness, which good result I attributed to the long rest rather than to the former. This course pleased the owner better than all medical appliances, as he is opposed to blisters, bloody operation or any severe remedies. Knowing this, I cautiously suggested to him that I could remove the caulkboil without hæmorrhage, to which he readily agreed, Still I was obliged to acquaint him with the fact that the detachment of the tumor would present a raw surface, whereupon he hesitated and would probably have changed his mind had it not been for the intervention of his lady, who, though as sentimental as he, argued that the animal ought to be relieved of that burdensome inconvenience. Yielding to her humane entreaty, he consented to have it done.

On March 28th, I passed a 4 millimeter caliber rubber tube around the growth as close as possible to the olecranon, pulled it as tight as it would stretch and united the ends with two knots. To facilitate matters, the groom had to take hold of the tumor, draw it from its origin sufficiently so that the string found a position between the tumor and point of attachment to prevent its slipping. During this manipulation the horse stood perfectly still. He was then returned to the stable, tied right and left to prevent his molesting the part under treatment, but in such a manner as to allow him to lie down on a good bed of straw. He was fed on soft food and grass and led around every day.

From the third to the fifth day some swelling, tenderness and increase of temperature set in. A loosing of the hair, baldness of the skin, oozing of some serum around the string and foetid odor was also observed.

The rim around the ligature was dampened once per day with pure phenylic acid by means of a feather point. On the thirteenth day three fourths of the tumor was detached, and that which still adhered was so tough that I concluded to sever it with the knife, and found that this tissue instead of being sarcomatous was of fibroid duration, necessitating the dissecting of an additional small piece reaching from the cut edge of the

wound toward the center which caused a slight hæmorrhage, and, though it did not amount to much, it was unpleasant, inasmuch as I had given the owner to understand that I would perform it without loss of blood. The almost level wound, measuring three inches in diameter, was now cleaned from blood, etc., dressed with phenylic acid and covered with a thin layer of cotton. Cotton is a feeble covering, still it together with the acid, helps keep out insects and dust.

The animal was then tied short for three days and nights to protect the elbow against harm and the phenylic acid application repeated as often as necessary to prevent excrecence. The hairy edge around the wound was oiled twice daily to prevent the cotton from adhering to it.

After a few days, the raw surface began to fill, particularly the spot where the fibroid growth had been dug out, so that caustic potash had to be resorted to. This was applied only superficially on the largest, level space, while the seat of the fibroid required its application several times within ten days and twice I made use of a few drops of saturated solution of chromic acid, which stopped the rebellious excrescences on the fibroid hiatus. From the 17th day solution resorcin and dermatol were applied in rotation until cicatrization was completed which was about the ninth week.

This case would hardly be of any special import, its course being almost the same as the first, had it not been for the fibroid tissue which proved to be more tenacious for the ligature to cut through, than through the other three fourths. By applying another elastic tube of smaller dimensions, and giving it about two days time to constrict, this remaining fourth, my prognosis would have been confirmed, but allowing it to bleed, which might have been so easily prevented, it was somewhat weakened and should serve as a reminder never be to positive in expressing a prognosis.

There is an almost unanimous opinion prevailing among veterinary practitioners, that the treatment of shoeboils, is, as a rule, unsatisfactory even when operated upon by excision, the method

most commonly pursued up to the present time. Why our efforts are not oftener rewarded with better results, is in all probability due to micro-organisms occupying the bursa mucosa. Prof. Pflug describes the bursa mucosa as chamberlike (multilocular) which, in the normal state, can be inflated to the size of a middle sized apple; in a morbid condition, as in caulkboil, it may be two and three times as large. Should this intricately constructed sac be occupied by microbes, which is quite likely to be the case, it would be difficult to rid this network of them except by applying the elastic ligature, whereupon this bursa will necessarily drop off with the degenerated appendage. The surgeon then has an opportunity to do all possible good with therapeutics and will have little reason to be disappointed, provided he is not too chary about sacrificing the time to watch personally the progress of its course, for, in cases of this kind, it is not advisable to trust too much to attendants, for they are very apt to slack off in their attention as soon as they see any improvement, or if the patient is ^{not} doing so well as they would like to see, often know of a better remedy, or a better doctor, which possibilities must be guarded against.

SOCIETY MEETINGS.

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION.

3 The regular quarterly meeting of the association was held at the Hotel Rennert, on Tuesday, July 24th, at two P. M. In the absence of the president the meeting was called to order by the secretary. Dr. Wm. H. Dougherty was elected chairman *pro tem*.

Drs. Dougherty, Lloyd and Clement responded to the roll-call. Dr. Robert Ward was present as a visitor.

The secretary read a letter from Dr. Stewart E. Paulet, tendering his resignation on account of its being impossible for him to abide by the code of ethics. It was voted to accept Dr. Paulet's resignation. The secretary also read a letter from the secretary of the Virginia State Association to this association, extending an invitation to the meeting at Norfolk in August.

I was voted to thank the secretary of the Virginia association for his kindness, but that it would be impossible for us to send delegates to the meeting.

Dr. Clement read a paper on "The History and Purposes of the Association," which was well received by those present.

The meeting then adjourned. A. W. CLEMENT, *Sec.*

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The regular August meeting of the Veterinary Medical Association of New Jersey, was held at Sanger Hall, Newark, N. J., August 9, 1894.

Meeting called to order by the president at 11.45 A. M. Thirteen members present at roll-call. Visitors one, Dr. James B. Raynor, delegate from Pennsylvania State Association. 13

The president's address was on subjects of much interest to the association.

Secretary's and treasurer's reports showed the association to be in a flourishing condition.

The legislative committee reported "defeat," as they failed to get the bill passed to pay for the cows killed with tuberculosis. One of the members read a circular of Dr. Cooper's, of Trenton, with the names of twelve of the members names of this association as references printed in large type. The president appointed a committee of three to censure Dr. Cooper for using the names on a patent medicine circular without their knowledge or consent. A committee of three was also appointed to revise the by-laws of the association, as it was decided to hold but two meetings a year instead of three, as at present. The president urged the members to use their influence to stop the indiscriminate docking of horses tails. Dr. Raynor then spoke on the subject of "Cruelty to Animals," showing how our legislators would pass stringent laws for said society, giving unlimited power to some of their ignorant agents, while they ignore the pleadings of the veterinarians to give them power to try and exterminate some of the more dangerous and loathsome diseases, which would not only alleviate the sufferings of animals, but of

the human family as well. The day being very warm, the essayists were excused till the December meeting, and the time occupied by the members in reporting cases and their treatment. All declared it to be one of the pleasantest meetings ever held.

Adjourned to meet in Trenton the second Thursday in December.

S. LOCKWOOD, *Sec.*

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The Indiana Association of Veterinary Graduates met at the Agricultural Rooms, State House, on July 12th.

The meeting being called to order by the President, Dr. J. E. Cloud, in the chair, with the following members present: C. M. Stull, F. A. Balser, H. R. McCaulay, G. H. Roberts, J. W. Klotz, C. F. Bell, W. Carnes, J. E. Cloud, J. C. Rodger. Honorary Members, T. L. Armstrong. Visitors, G. R. Christian, W. B. Craig and J. Crail. In the absence of the Secretary, Dr. J. H. Honan, Dr. Balser, moved seconded by Dr. Bell that Dr. J. C. Rodger act as secretary.

The Board of Censors being absent, it was moved by Dr. Bell, seconded by Dr. Balser, that the president appoint a board to act at once. The president appointed Drs. Bell, Balser and McCaulay.

The following gentlemen's names were proposed for membership: Dr. Bell proposed J. O. Gleeson, of Kokomo, and J. Crail. Tipton, Ind. Dr. McCaulay proposed the name of W. B. Craig, of Indianapolis; Dr. Balser proposed the name of R. J. Hall, of Rushville, Ind. The Board of Censors being satisfied that the above gentlemen were qualified, a ballot was taken which resulted in their election.

After some minor business was transacted it was moved and seconded we adjourn till 7.30 P.M. The evening session was called promptly on time by the president, who ordered the report of the secretary read, which, after being read, was adopted. The report of the treasurer, Dr. Balser, was read and accepted by the association. The question in regard to the Indiana Veterinary College, that had been laid on the table at the previous meeting

in Fort Wayne, was brought up and discussed by members of the faculty, Drs. McAuley, Armstrong, Craig and Roberts. Moved by Dr. Bell, seconded by Dr. Balser, that the Indiana Association of Veterinary Graduates, as a body, recognize the Indiana Veterinary College, situated in the city of Indianapolis, Ind., under its present management. The motion was carried unanimously. Moved by Dr. McAuley, seconded by Dr. Balser, that no one holding a diploma and claiming to be a graduate of the Indiana Veterinary College prior to the year 1894, will not be recognized by the association. Carried. Moved by Dr. McAuley, seconded by Dr. Balser, that we meet the second Tuesday in December.

Dr. Balser, of New Castle, read a paper on "Dairy Inspection,"* which was ably discussed by all the members present. Moved by Dr. Bell, seconded by Dr. Balser, that a committee of three be appointed to confer with the State Board of Health. The president appointed Dr. Rodgers, Dr. Balser and Dr. Craig. Moved by Dr. Rodger, seconded by Dr. Klotz, that we adjourn until 9 A. M., to-morrow morning.

The meeting called to order by the president in the chair. Dr. W. E. Carnes, Washington, Ind., then read a well-prepared paper on "Is Tetanus Due to a Germ,"† which was discussed pro and con, but all agreed that we do not have any idiopathic tetanus and that it does not exist. Governor Matthews then made a short address to the members of the association, which was very gratefully received by the members present. A paper was then read on "The Veterinary's Relation to Client,"‡ written by Dr. T. B. Pote, Terre Haute, but owing to the inability of the doctor to be present, the paper was read by Dr. H. R. McAulay. A paper was then read by Dr. J. C. Rodgers on "Bills and Collections." A vote of thanks was then tendered the members who furnished the excellent papers. The meeting adjourned to meet at Anderson, the second Tuesday in December, 1894.

J. C. ROGERS, *Secretary pro tem.*

* Published in this issue.

† Published in this issue.

‡ Published in this issue.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Virginia State Veterinary Medical Association was held at the Atlantic Hotel, Norfolk, Va., August 15, 1894. There were present Dr. W. H. Harbaugh, president; Drs. E. P. Niles, T. A. Donaldson, J. H. Adamson, J. T. Bushman, George C. Faville, Wm. T. Gilchrist and others. This society was incorporated by Act of the Legislature during its last session, and the growing interest among the veterinarians of the state in questions of interest to the association is encouraging. Many subjects were brought forward for discussion that were of importance.

The Committee upon Statistics made a partial report which was interesting. Through this committee was reported a case of weak knees in a stallion, "which seems to have contracted the weakness from the sire, whose offsprings are noted for the same trouble." Cases of hereditary periodic opthalmia were reported and the question raised as to whether mules ever go blind from this cause. There were several cases of hereditary rheumatism reported from the same committee. In the discussion Dr. Niles advanced the idea that rheumatic affections are to be classed with the malarial disorders.

The Committee on Resolutions reported as follows:

Whereas, The Veterinary Medical Associations of the different states and the United States Association discountenance the use of specific remedies and the endorsement of such, and

Whereas, It is impossible to properly diagnose diseases by mail. Therefore be it

Resolved, That this association disapproves of the endorsement of specific medicines by certain veterinary colleges.

Resolved, That the association discourages answering queries in the various agricultural and other papers under the head of "Veterinary Editor."

These resolutions were adopted. Dr. M. D. Hoge, M.D., of Richmond, and Dr. Drake, of Leesburg, were elected to membership.

Dr. George C. Faville was elected secretary of the association. After the transaction of other routine business, Dr. Faville read a paper on "Maladie du Coit," which was listened to with much interest. The paper was illustrated by specimens that

were procured during the work of stamping out this disease in Nebraska. After a recess for supper, the association was called to order at 8 o'clock P. M., to listen to a very interesting paper on "Tuberculosis,"* by Dr. E. P. Niles, of the Agricultural College at Blacksburg. This paper was followed by a spirited discussion.

The fact that the veterinary profession is small in numbers in this state, and that the state is crowded with empirics, who fail to appreciate the gravity of this disease, is very apparent.

The fact that a so-called veterinarian had given a certificate of health for a large dairy in Richmond was shown by the published certificate which is used as an advertisement. Speaking of this particular inspection, Dr. Harbaugh said, "I was informed that this inspector examined about one hundred cows in a half hour, and pronounced them free from tuberculosis. I have made inquiries and failed to find a single instance where he tested with tuberculin." After full discussion the following resolutions were adopted.

Whereas, Tuberculosis is in most instances occult in its manifestations, and

Whereas, Inspections as generally made at the instance of interested parties are inefficient and practically worthless, and

Whereas, The prevalence of tuberculosis in our dairy herds is alarming in its extent and fearful in its influence upon the health of the consumers of dairy products, and

Whereas, Owners of dairies in this state have published certificates from so-called Veterinary Inspectors, giving clean bills of health for their dairies, which are misleading to the consumers of milk and absolutely worthless as a guide for the public. Therefore be it

Resolved, By the Virginia State Veterinary Medical Association, that we deplore the lack of information that the general public has upon this question.

Resolved, That we unqualifidly condemn the granting of certificates of health for dairies by unqualified men or after superficial examinations.

Resolved, That it is the opinion of this association that no inspection of any dairy is of value unless made by a qualified veterinarian under municipal or state authority.

After a general discussion, lasting until the "wee sma' hours," the association adjourned to meet in Charlottesville, on January 3, 1895.

GEORGE C. FAVILLE, D.V.M., Sec.

* Will be published in our next issue.

OBITUARY.

CHARLES B. MICHENER, D.V.S.

We are late possibly in taking notice of the death of this worthy veterinarian, but absence from the country and newspaper notices received only more than a month after the sad event, is the only excuse for our apparent neglect.

The newspapers and the professional journals have said all that could be said of interest to the public about Dr. C. B. Michener, they have recalled his graduating to the New York College of Veterinary Surgeons, to the American Veterinary College, *his true alma mater*, to which he became attached afterwards as professor of obstetrics, materia medica and therapeutics. His official life in connection with the work of the Bureau of Animal Industry, and his last relation to the National Veterinary College. All of these have been recalled—but to us remain the pleasantest duty to say one word of him, who as a man of intelligence and ability, could have expected to reach the highest professional veterinary honors one could deserve in this country,

A student of one of the hardest workers in veterinary medicine on this continent (Dr. I. Michener, his father), Dr. C. B. seemed to be possessed of even greater ability than his preceptor; as a student (as we first knew him) he was one of the first in his class, as a practitioner he was most satisfactory to his employer, and as a teacher but few will be superior to him in his delivery and his manner of conveying instruction to those who listen to him.

Of his faults no one has to judge, but as a veterinarian and a man of great ability, Dr. C. B. Michener stood amongst the first of his country.

His diploma at the American Veterinary College is dated February, 1876.